NATURAL WOODS

AND HOW TO FINISH THEM

With discussions on interior and exterior painting, wall finishing, enameling, automobile refinishing

BERRY BROTHERS, INC.

DETROIT, MICHIGAN, U. S. A. WALKERVILLE, ONTARIO, CANADA

Natural Woods and How to Finish Them

To which have been added descriptions of material to use and discussions on interior and exterior painting, wall finishing, enameling, automobile refinishing, etc.

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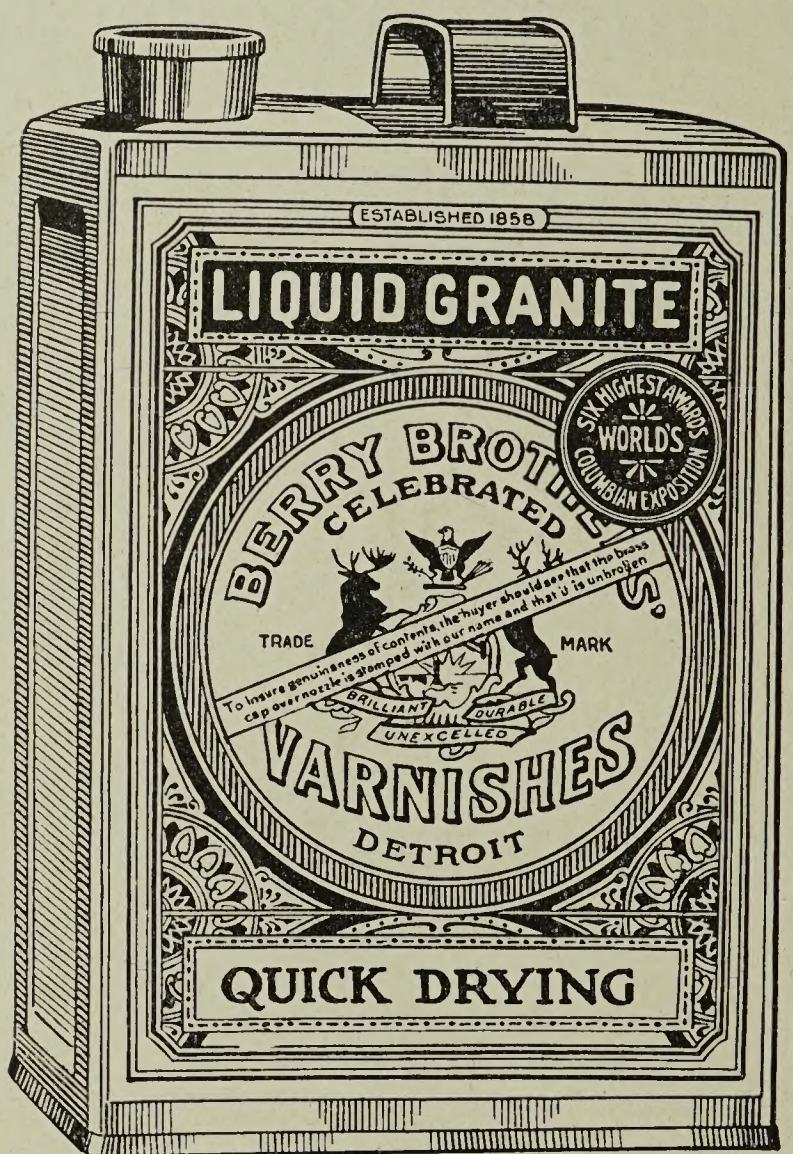

Liquid Granite Floor Varnish is the famed million step test varnish. It is so elastic that wood finished with it may dent under a blow from a hammer but the varnish will not crack. Moving furniture does not mar, dancing does not mark, children at play do not scratch, hot or cold water does not affect, falling chairs and like accidents do not harm Liquid Granite finished floors.

IT WEARS

Why This Book Was Written

THIS is not in any sense a text book. To list each wood used for interior trim, or each wood used in the production of furniture, and merely tell how and why to treat each surface so as to obtain any possible result, would fill several large books, for the subject is one which is almost inexhaustible. . . . It is taken for granted that those who will receive copies have some knowledge of wood finishing, and so the purpose of this book is to serve as a help or guide. It is authoritative wherein it relates to specifications and methods and thoroughly dependable wherein it refers to material. . . . It leaves selection of effect to the reader and tells the best way to secure the desired effect. . . . It has nothing to say, for instance, upon the desirability of finishing a ceiling with pine timbers and rough plaster, side walls of northern pine, and floors of wide southern pine boards, but it tells how the desired color treatment can be secured and how to obtain a finish that will protect as well as beautify the surfaces. . . . There is nothing of an experimental nature given in the various directions for wood finishing or wall treatment, and there is nothing of an experimental nature in any of the products specified for the purposes.

Every specification gives the best accepted practice and every material has been used over and over again throughout the world. . . . Staining, shellacking, filling, surfacing, etc., are the necessary groundwork to a successful and satisfactory result. The finishes specified are the best and most dependable that can be used for the purposes. . . . If you wish to see samples of any wood finished in any particular way; if you wish special information on finishing wood, plaster, masonry, or metal with varnish, enamel, lacquer, or paint; if you are in doubt on any matter concerning varnish, enamel, lacquer, paints and their uses; if you are an architect, a manufacturer, a painter, or a finisher and desire any information regarding brush-applied or spray-applied coatings, please write us. . . . We maintain a technical correspondence department, and if you write in detail you will receive a detailed reply. You are not obligated in any way by so doing. . . . We also maintain a perfectly equipped finishing room and the experts in charge are at your service. . . . We stand willing to serve you in any way that we can. . . . May this book serve as a useful reference.

BERRY BROTHERS (INC.)

Interior Trim and Furniture Woods

Open-Grain Woods

Oak
Mahogany
Chestnut
Ash
Walnut
Rosewood
Elm
Butternut

Close-Grain Woods

Birch
Redwood
White Pine
Yellow Pine
Cypress
Holly
Gum
Beech
Southern Pine
Poplar
Fir
Spruce
Maple
Bass
Georgia Pine
Cherry
Cedar
Sycamore

Hard Woods

Oak
Maple
Yellow Pine
Birch
Georgia Pine
Elm
Ash
Southern Pine
Rosewood

Medium Hard Woods

Gum
Butternut
Chestnut
Walnut

Soft Woods

Mahogany
Cedar
White Pine
Spruce
Beech
Cypress
Poplar
Holly
Bass
Fir
Redwood
Sycamore

Oak

Oak is king of woods. Among those woods used for interior trim, and for furniture, none has ever succeeded in displacing oak in continuous popularity, and it is doubtful if one ever will. Now and then, for a few years at a time, one or more woods has a fashion or vogue, a renaissance or period, and then there is a sure return to oak. There are obvious reasons for this, because, in addition to its lasting qualities, its durability, its permanency, there is a dignity, an appearance of strength and of solidity, a pleasing fascination not possessed by any other wood. Oak is truly beautiful in its natural state, and this beauty is intensifiable by a greater variety of finishes than can appropriately be applied to any other wood.

Oak is an international wood, found in many countries, and is the leading hardwood of North America. There are nearly three hundred kinds of oak in the United States, but from the finisher's viewpoint there are but two: white oak and red oak. White oak has a better color, finer texture, and more prominent figure; it is considered a superior wood for fine furniture, cabinet work, and interior trim of the highest order. This does not mean that red oak, though having a slightly red tinge and being coarser in grain, is not a valuable wood, because for many purposes this coarseness makes it possible to secure the desired decorative effect.

Oak is cut two ways—straight-sawed and quarter-sawed. Quarter-sawing reveals that distinctive characteristic of oak, the pronounced flakes that result from the medullary rays of the tree formation, and with which everyone is familiar. Quarter-sawed oak is, how-

ever, seldom used except in large, flat surfaces, and does not fit in with the style of trim and design of furniture in general use at the present time.

Styles in oak finishing change frequently—old finishes become obsolete as new ones are introduced. Some of these meet with such favor that they become standard, but it is quite out of the question for every one of them to achieve enduring popularity.

Oak, because of its decidedly open grain, offers a greater opportunity for the use of fillers which contrast with stains than is offered by any other wood. Very pleasing effects can thus be produced, and most of these are of a rich, dignified appearance, and far separated from the fad class.

Silver Gray, which, by the way, produces a finer effect on oak than it does on other wood, requires a white or light filler, a number of the greens are especially attractive if gold bronze filler is used, and silver or aluminum bronze filler produces a beautiful tone when used with dark gray.

Light Fumed, Dark Fumed, Flemish Black, Mission, Hunter, and a few other stains when applied to oak do not require filler to produce the finishes in demand at the present time. These colors do, however, require a coat of shellac to partially fill the grain and to protect the stain from finishing coat disturbance.

In fact, oak can be treated in almost any color, tint, or shade, and the grain filled with a paste wood filler that harmonizes or contrasts with that color. There is only one DON'T in finishing oak and that is: Don't use mahogany stain on oak.

Birch

Birch is a hardwood of very fine texture and close grain. It has a very wide range of commercial uses and is one of the leading interior trim and furniture woods.

There are several types of commercial birch, but the names come from those sections of the trees from which they are cut rather than from a noticeable difference in the trees themselves.

Curly birch is only found in occasional trees, the result of a rare grain development, and is therefore comparatively high-priced. It has a delicate, wavy figure, and is used in fine furniture, panels, etc. White birch is from the heart of the tree, while mixed wood, from both sapwood and heart, is graded as unselected.

Birch will take practically any desired color of stain and is one of the finest woods for enamel finish. Unselected birch is better suited to dark stains and to the various mahogany colors. Gray stains can, however, be used on unselected birch. Some finishers use a white paste wood filler when staining with Silver Gray.

Maple

Maple is a hard, tough, strong commercial wood, close-grained and of fine texture. Its toughness and its resistance to wear make it one of the nation's leading floor woods. It is widely used for that purpose in public buildings, schools, dance halls, and in home architecture.

At the present time, 1932, maple is widely used in period furniture of the various Colonial types, in the

new Modernist designs, and, to some extent, in both period and Modernist interior trim.

White, clear grade of maple, which comes from the sapwood, is especially light. It is the white wood which should be used for furniture and matched trim, and for the finer floors where natural finish is to be used. The heartwood is brown and makes a satisfactory material where a brown, mahogany, or dark antique stain is to be used.

Curly maple is the result of a twisted growth and the manner in which the lumber is sawed. Bird's-eye maple is cut from sugar maple trees.

White, curly, or bird's-eye maple takes Silver Gray stain in a very acceptable manner and the result is one of the most pleasing of finishes.

Maple, especially bird's-eye, yellows with age, and so stains which produce yellowish browns are used quite extensively in finishing period furniture. Cherry stain is also used in finishing renaissance maple furniture and trim, as are also various brown stains. Maple floors are stained to any desired color, tone, or shade.

A transparent finish on maple, when the wood is rightly prepared, can be given a very high polish, and, in fact, a gloss finish looks better on maple than does a semi-gloss or dull.

Maple, like birch, forms an excellent foundation for an enamel or paint finish.

Maple floors, where traffic is heavy, especially in schools, factories, etc., are often finished in oil, and kept in condition by occasional oiling. Though such a treatment darkens the wood, it makes possible a floor that is easily kept clean. Berry Brothers Lionoil is widely used for this purpose.

Gumwood

Gumwood has only recently come into its own. For years it was not called by its own name and was looked upon as a material to be finished in imitation of some other wood. Today it is recognized and valued for its distinctive beauty and for its wide range of usefulness. Gumwood is used in the finest interior trim, in the production of truly beautiful furniture, and is undoubtedly as decorative a material as there is in the entire catalog of woods.

Gumwood is a close-grained wood of a very fine texture and was once called satin walnut because of its beautiful, soft, pleasing markings. No two logs seem to produce wood of exactly the same figure, and that is why material for trim or furniture should be carefully selected and matched.

Gumwood is considered by some to be a soft wood, though it is classified by its manufacturers as hardwood. It is not as hard as maple, birch, etc., but is harder than many of the pines, and so can be placed among the medium hardwoods.

The sapwood is light-colored with occasional brown markings, while the heartwood is medium brown with a reddish tinge. This heartwood is called red gum. Gumwood is plain-sawed, quarter-sawed, and veneered. Red gumwood is sorted and graded to supply either figured or plain wood. Veneered wood, when pattern-matched, equals Circassian walnut in beauty and surpasses it in variety of patterns or markings.

Selected gumwood finishes very well in the natural color, but best results are produced when it is given a thin, light brown stain. Where light streaks appear

next to the dark, it is good practice to give the light wood a thin preparatory coat, wipe off, and then give the entire surface a separate coat.

Acid stains should always be used on gumwood, though they have a tendency to raise the grain. This means that a light sanding is required before the succeeding finishing operations.

The beauty of gumwood is better preserved by a dull treatment than by a gloss or polished finish. Dull lacquer, dull varnish, or a hand-rubbed varnish finish produces the best effect on either interior trim or furniture.

Gumwood, because of its close grain, makes an excellent foundation for an enamel finish.

Pine

The first of the pines is white pine. It has been a building material, an interior and exterior finish, from the days of the Pilgrims. It is a soft wood and has a close-grained, uniform texture. It is a rather pale wood with only a slight yellowish tinge, and, when clear, has very few markings. It is a smooth wood, without raised grain, and one that does not warp, shrink, check, or swell. It is the equal of any wood, and superior to most of them, as a foundation for paint or enamel finishes.

Clear white pine is not a desirable wood for most stain finishes, though selected boards having markings more pronounced than the average can be stained with light mahogany or light brown stains. Many finishers give the surface to be stained a preparatory coat of one-half linseed oil and one-half turpentine. This coat is brushed in, wiped off, and allowed to dry for about

twelve hours. Its purpose is to seal the pores and stop suction. Oil stain produces better effects on clear white pine than do water or acid stains.

Knotty White Pine

A new renaissance, one in which white pine plays an important part, is well under way. This is the return to Early Colonial and Provincial French treatment of interiors and the associated furniture. In new home structures, in remodeling, and in rehabilitation, white pine, carefully selected for a balanced display of hard, firm knots, is used to form walls or parts of walls. This new treatment is so popular that other pines are being used, and wall paper, in knotty pine patterns, has also been produced, but knotty white pine is the one material that can be used for a truly fine architectural finish and for a pleasingly attractive result.

Every kind of material, from shingle stain and up, has been used to produce the natural weathered effect on such walls, but, if there is to be a richness of finish, a real beauty that makes such walls worth while, both the carpentry and the finishing should be done as carefully as though the walls were of costly wood.

It is taken for granted that the boards have been carefully selected, sanded, and joined, and then again thoroughly sanded to a smooth finish after erection. The wood is then given a wash consisting of 28 per cent ammonia. This ammonia treatment stains the pine to a yellow tone and uniformizes the boards. When the wood is thoroughly dry it is stained with BERRY BROTHERS No. 500 OLD PINE ACID STAIN to give it the desired aged or antique appearance. The knots show through the stain in very attractive reds and the

wood takes on a soft, velvety finish, changeable at various angles. The developing and protective coat is one of Berrylac (clear), followed by one coat of Antique Paste Filler (reduced) and finished with one coat of Liquid Granite Dull.

Southern Pines

Considering southern pines from grain formation and markings, there is a decided difference between them, but, considering them from the finisher's viewpoint, they are practically the same. Southern pines are hardwoods and close-grained, but most of them have alternate hard and soft streaks. Southern pine is used extensively for interior trim; in fact, it is one of the leading woods in home architecture, and is also widely used as flooring. It takes all the brown stains, green, weathered effects, and dark reds, but does not take Silver Gray as well as do other woods.

Some finishers use preparatory treatments before staining southern pine. First they wash the wood with benzole, or with alcohol, to remove pitch or resin from the surface of the hard streaks, as the resin has a tendency to keep the stain from properly penetrating. Then they give the wood a coating of one-half linseed oil and one-half turpentine, wiping off, and allowing it to dry before applying stain. This treatment stops suction in the soft streaks of the wood.

Water or acid stains do not penetrate the hard, gummy streaks of southern pine, and so penetrating oil stains give the best results on woods of this class.

Southern pine is improved in appearance, in both trim and floor, by being finished with a gloss or semi-gloss coat of varnish.

Walnut

Black walnut is a medium hardwood that needs no introduction to the average American. It is a strong, durable, beautiful open-grained wood that does not mar easily. It comes straight-sawed and in veneer from burls or stumps, and curly from trees of twisted growth.

It is usually finished in the natural wood. Being an open-grained wood, a filler is required, and one that is very dark brown is generally used, though at times light gray fillers, or even metallic bronze fillers, are used for special effects.

A high gloss varnish is used in finishing walnut and it is usually rubbed to a high polish.

Mahogany

Mahogany is a soft, open-grained wood that is looked upon by many as being the finest of woods. The general opinion is that mahogany is expensive, while the truth is that it is not a great deal higher-priced than selected oak, birch, etc.

The different mahogany woods are truly beautiful in the natural state, and all that is required is a dark paste wood filler and a finish with a high gloss varnish. The public looks, however, upon mahogany as a darker wood than its natural color, and so interior trim and furniture are both commonly stained to an antique finish.

Water or acid stains are by far the best for use on mahogany, be it plain, stripy figure, mottled, fiddle-back, or crotch. Only mahogany-color stains are used.

Cypress

Cypress is soft wood, close-grained, and of fine texture. The brown heartwood has great resistance to decay, to exposure to weather, and to climatic changes. When properly seasoned it does not shrink or swell. It is not a resin wood, but it does contain an oily sap which should be wiped off the surface immediately before paint or stain is applied. A cloth soaked in benzole should be used for this purpose.

Matched pattern cypress makes a very fine interior finish that does not become an imitative wood when finished with mahogany or walnut stain. It is by far too dark a wood to be finished with any of the grays.

There is a finish for cypress called Sugied Cypress which cannot be produced with any other wood. This finish is secured by slightly burning the soft wood with a blowtorch but without affecting the hard wood. It is then brushed with a soft wire brush which removes the charred wood. It is then filled with a paste filler, and wiped, so that the filler remains in the depressions and thus produces a strong contrast to the hard-grain surface.

The best effect is secured if a light filler is used. The surface is then given a coat of white shellac, which is followed by a pale dull varnish or dull lacquer.

Dull or semi-gloss varnish produces the best effects on natural or stained cypress; that is, except when mahogany stain is used.

Redwood

This wood, from the great trees of California, is constantly increasing in popularity. It is a soft wood

and close-grained. It is not unlike cypress in its resistance to moisture, though it also has the characteristic of absorbing moisture, and so the painter must be sure it is thoroughly dry before applying paint on exterior work.

It is enameled and painted in keeping with standard practice with one exception; that is, on both interior and exterior surfaces all knots should be shellacked after the first coat is applied, and not before the first coat, as is common practice with most woods.

Redwood can be stained with most colors, and it takes a beautiful finish. Both penetrating oil stains and water or acid stains can be used on this wood.

Chestnut

Chestnut, a medium-hard, open-grained, coarse wood is stained, filled, and finished in the same manner as oak. It is a difficult wood to paint—it being necessary to thin the first two coats with turpentine and brush out well. Ash and elm, both open-grained woods, are also finished in the same manner as oak when used for interior trim.

Basswood, Poplar, and Whitewood

These are also soft, close-grained woods and are used for exterior trim, siding, etc. They are easily painted. These woods can be stained. They are so soft that the stain should be applied with care and with only a small amount in the application. It is general practice, when used for interior trim, to paint or enamel them.

What to Use and Why

A FEW years ago a well-known authority, the editor of a leading periodical devoted to the interest of painters and decorators, wrote a book. In it he said that the manufacture of satisfactory paints, varnishes, enamels, etc., is a great deal more than a trade or a craft; that it is a very exacting profession, one requiring special technical knowledge, experience, fitness, and understanding. He plainly stated that it requires a knowledge of chemistry, not merely one of the school, but applied, productive chemistry of a high order, backed by extensive, personal research. There must be special equipment, the careful selection and thorough testing of all raw material, and with it a well-developed "knack of making," for this is the only way in which dependable finishes can be produced. This is true of paints, varnishes, lacquers, and enamels, and it is equally true of stains. Who would attempt to make his own varnishes? Why, then, should one try to make his own stains?

The same authority holds that stains made by a reputable manufacturer are more dependable in every way than "homemade" stains. The tone is clear and uniform and the color is far more apt to be permanent.

In describing wood-finishing material, stains are first in order because, if a transparent finish other than natural is required, one that shows the grain or markings of the wood, staining is always the first finishing operation.

Berrytone Penetrating Oil Stains

BERRYTONE PENETRATING OIL STAINS strike deeply into the wood, producing a solid, uniform surface. They can be brushed on, but, in all staining operations, wiping-in always produces a more satisfactory and uniform color tone.

These stains come in the 10 following standard colors:

Silver Gray	Golden Oak
Walnut	Light Fumed Oak
Medium Mahogany	Dark Fumed Oak
Light Oak	Dark Mahogany
Dark Oak	Brown Mahogany

Come packed in 5-gallon, 1-gallon, ½, ¼, ⅛, and $\frac{1}{16}$-gallon cans.

A color card showing the 10 colors, or small panels of any wood commonly in use and finished with the desired color, will be mailed upon request.

BERRYTONE oil stains are called "penetrating" because they do penetrate into the wood, color the fiber, and are truly transparent. Thus, a far more attractive and satisfactory effect is secured than where self-prepared oil stains are used. Such stains are usually made from pigments and do not penetrate the wood. Though spread very thin, they do not produce the same transparency that is secured through the use of BERRYTONE PENETRATING OIL STAINS. Quite a large amount of pigment in the self-prepared stains necessarily remains on the surface, hides the grain of the wood, and sometimes clouds the finish.

While BERRYTONE PENETRATING OIL STAINS are very carefully formulated, and are uniform in color, it

must be remembered that any color will produce varying shades or tones on different woods. This is because stains perform their work by being absorbed into the pores of the wood, and woods not only differ widely in hardness but also in grain and color.

To insure successful results with oil stains it is absolutely necessary to apply a coat of pure shellac when stain is dry. The shellac coat acts as a sealer and keeps the coloring matter in the stain from bleeding into the varnish coats. Orange shellac is sometimes used over mahogany stains, but White shellac is better for use with other colors. Where paste filler is used on open-grain woods, it is necessary to apply the shellac before filling, for, if this is not done, the paste filler will absorb color from the stain and produce a mottled or clouded effect.

NOTE: For greater permanence of color, we recommend the use of water or acid stains. Please read the article, "Discussion of Stains and Method of Use," beginning on page 21.

Berry Brothers Water or Acid Stains

These stains penetrate deeply into the wood, are uniform in tone, and permanent. Water Stains, or Acid Stains as they are often called, are for use in finishing the finest interior woodwork, fine cabinet work and furniture. The distinctive merit of Berry Brothers Water or Acid Stains is that through their use there is produced a clearer, more brilliant in color tone or shade,

more transparent, and more permanent finish. They hold their color when subjected to strong light. Truly fine finishing calls for enhancing the grain, figure, pattern, or marking of beautiful woods, and these stains preserve, develop, and emphasize this beauty. The purpose of staining is to attractively color the wood while retaining its natural beauty, and there is not another kind of stain that will produce the same satisfactory results. BERRY BROTHERS WATER OR ACID STAINS are made in the following 15 standard colors:

Silver Gray	Rosewood
Light Fumed Oak	Mission
Dark Fumed Oak	Flemish Black
Walnut	Flemish Brown
Dark Oak	Malachite Green
Dark Golden Oak	Medium Mahogany
Antwerp	Dark Mahogany

Brown Mahogany

Come in 1-gallon containers.

A small panel of any wood commonly in use for either interior trim or furniture, stained with the desired color, and finished in either gloss, dull, or rubbed varnish, will be mailed upon request.

BERRY BROTHERS WATER OR ACID STAINS should be used only on new wood. Water stains have a tendency to raise the grain of the wood, thus necessitating sanding. The best practice on all fine work is to sponge the wood with water, thus raising the grain, sanding when dry, and then staining. The addition of a small

quantity of denatured alcohol to water or acid stain will greatly reduce the grain-raising tendency. The quantity should never be greater than 1 quart of alcohol to 1 gallon of stain.

Water or acid stains when used on veneered surfaces, especially when the veneer is thin, may affect the glue. It is good policy to specify and use waterproof glue on all wood that is to be stained and finished.

NOTE: Please read the article, "Discussion on Stains and Method of Use," that follows.

Discussion on Stains and Method of Use

Nature has given to each wood a grain, texture, and pattern distinctly its own. Some woods must be treated in a manner that will emphasize the grain and the markings before the beauty is noticeable or before they possess any decorative value. In fact, some of the most pleasing effects are secured by using color to develop and enhance the beauty of certain woods that would otherwise be comparatively unattractive.

The general practice of protecting wood surfaces, and at the same time preserving the natural beauty, is by the proper application of a suitable transparent varnish. The common method of giving wood the desired color effect, and thereby developing and emphasizing the grain, is by the use of stain.

In stained work, color is the foundation of the finish. It follows, therefore, that staining should receive very

careful attention, as the ultimate appearance of the finished wood depends largely upon the staining operation.

It should be remembered, when selecting the stain to be used, that color and condition of wood have a great deal to do with the final effect that will result from application of the selected stain. This is especially true of woods of deep color and prominent markings. It cannot be expected that a stain of any given color will produce the same tone on different woods, for the obvious reason that contrasting grains and patterns show through the stains and naturally have a decided influence on color effects. Porous woods absorb more stain than hard, close-grained woods, and therefore the color effect will be darker or more intense on the more porous woods.

Hard woods, with a pronounced grain or markings, will take stain in a different manner than woods having a fine, even grain. The reason for this difference in appearance is that stain penetrates more deeply into the soft or spongy portion of various woods, the harder and greater-resisting parts absorb far less stain, and, therefore, show lighter. The result is a decided contrast and variation in tones.

Then, too, some woods contain tannic acid, and the tendency of the acid is to change the color of certain stains. It is good practice to finish a small panel of the wood with the desired stain, and thus be sure of the results. Of course, if you have a sample panel of the wood that has been stained and finished, you will secure practically the same results, thus eliminating the test.

Brown Mahogany water or acid stain produces a

lighter tone on mahogany than it does on gumwood, Silver Gray produces an entirely different tone on straight oak than it does on birch, and so on throughout the range of colors and kinds of woods. The name used to designate a stain, such as Antwerp, is used merely to classify the color in general. It does not necessarily mean that the color resulting from its use will be the same green on every kind of wood.

Berry Brothers Water or Acid Stains and Berrytone Penetrating Oil Stains are made from standardized formulas. This means that any given stain is always uniform in color. That is, any color of stain purchased at one time will match the same color purchased at another time if used on the same kind of wood.

It is not difficult to secure formulas or recipes for making stains. It is quite another thing, however, to make them. The finisher using Berry Brothers Water or Acid Stains and Berrytone Penetrating Oil Stains has a great advantage over the finisher using "homemade" stains. Many of the pigments used in the production of the various colors are not obtainable on the retail market nor has the finisher the chemical apparatus with which to test material. The brilliancy of some stains, the body and color depth of others, the transparency of many, can only be secured by combining several pigments, and there must be a knowledge of chemistry to make these pigments "hold together."

Then, too, unless there is a knack of mixing stains, one that comes only through long experience, the stains are apt to contain too much or too little pigment. In

one instance the result will be a cloudy surface and in the other a lack of color or body. Successful decorators, painting contractors, and furniture manufacturers depend upon properly formulated, accurately compounded, and thoroughly tested stains with which to produce the desired finish.

BERRYTONE PENETRATING OIL STAINS are widely used because they are convenient to handle and easy to apply. In comparison with water stains they dry slowly, can be brushed and rebrushed when applying, thus making it possible for the finisher to avoid laps and joints. Color intensity is easily controlled, for, if the surface is too dark after the stain is brushed on, it can be wiped off to a lighter finish by using a cloth.

BERRYTONE PENETRATING OIL STAINS differ greatly from oil pigment stains that some painters make for their own use. They penetrate into the wood and color the fiber. They are transparent without in any way hiding the grain or pattern of the wood. Oil pigment stains made by painters do not penetrate the wood or actually stain. When dry, they leave a fine coat of pigment on the surface of the wood that partly covers the grain, here and there allowing some of it to show through. Such mixtures are more like a thin paint in nature than they are like a stain. BERRYTONE PENETRATING OIL STAINS, because they are far more transparent, produce a clearer, brighter, and more satisfactory finish.

The coloring substances that can be used in penetrating oil stains are limited in number, and so the colors in which BERRYTONE stains can be furnished are also limited.

The widest use of BERRYTONE PENETRATING OIL STAINS is for coloring the wood trim in residences and other architectural structures. Because they can be applied with a brush and the application controlled to better advantage, they are easier than water or acid stains for the general run of workmen to use.

BERRYTONE PENETRATING OIL STAINS are sold by dealers who carry the Berry Brothers Line of Paints, Varnishes, Enamels, etc.

Berrytone Penetrating Oil Stains produce a permanent result when used on interior trim, but they should never be used on exterior work. It should be remembered that the amount of light entering the average room is only a small part of the light that exists out-of-doors. The careful selection and blending of material give to Berrytone a greater permanency than is to be found in the nonpenetrating pigment oil stains. We recommend, however, that Berry Brothers Water or Acid Stains be used for securing the desired color effect in sun parlors, show windows, and other places where there is apt to be more than the normal amount of light.

Water stains is the best general term that can be used to describe a large range of stains, for, in all of these, regardless of the coloring matter, water is the carrying vehicle and means of distribution. Berry Brothers Water or Acid Stains are made from practically as many distinctive formulas as there are colors. Some of them are made from acid anilines, some from acid solutions, and others from alkaline solutions. A certain brown may be formulated one way, while an entirely different formula is required to produce another brown. To the finisher who wants the very best results, the all-important question today is: What final effect will the use of the stain produce?

The one purpose in the production of Berry Brothers Water or Acid Stains is to make it possible for the finisher to secure stains that, regardless of color, will always possess the desired permanency. In the final result there must be clarity of finish, brilliancy of tone, and the color must last.

Though the colors that can be successfully produced in oil stains are limited in number, those that can be produced in water or acid stains are practically unlimited—the number of colors, shades, and tints run into the hundreds.

Berry Brothers Water or Acid Stains are by far the best type for use in any kind of finishing. They are applicable to fine furniture, cabinet work, and to selected interior trim. It takes greater skill and more time to apply water or acid stains, but it is only through their use that stained woodwork of any kind can be brought to the highest standard of finish.

Water or acid stains are very clear and do not hide the grain or pattern of the wood.

They penetrate deeply and truly stain, dye, or color the wood. There is a color brilliance, a sharpness of tone or depth of shade, a vitality, that is not to be found in other stains. Then, too, there is permanency of color.

BERRY BROTHERS WATER OR ACID STAINS possess great resistance to direct rays of sunlight. They should always be used in finishing windowsills, casings and frames, wood trim in sunrooms, and the woodwork of show windows. Light colors in these stains are as permanent as dark colors.

Because of the wide color range they are more practical than oil stains, and because of their clarity and permanency they are more pleasing and satisfactory.

BERRYTONE PENETRATING OIL STAINS are used for finishing new trim in the necessity type of residences or other architectural structures.

BERRY BROTHERS WATER OR ACID STAINS are used in finishing wood trim of any kind whenever it is desired to secure the best possible results and the most attractive finish. They are also used in finishing furniture and for fine cabinet work.

Both of these products will give satisfactory results when rightly used for the particular purposes for which they are made.

The first necessity in wood finishing, whether it be interior trim, furniture, or cabinet work, is to see that the wood is thoroughly cleaned and properly sanded. In preparing trim for finishing, the wood should first be dusted, and then all dirt, grease, or plaster spots should be removed. Use a putty knife to scrape off as much as possible of the substances forming the spots and then wash with benzine. Unless the wood is thoroughly cleaned, the finished work will have a spotty

and unsatisfactory appearance. Be sure to remove all grease, etc., from the pores of open-grain woods.

Any wood that is to be finished natural, or stained and finished, should be well sanded. If the trim has been sanded at the mill, then all that will be required is first a sanding with No. ½ paper, and then a thorough sanding with No. 00 paper until the surface is perfectly smooth. If the trim, or a part thereof, was built on the job and has not been bench-sanded, then it should have a good sanding with No. 1 paper before the No. ½ and No. 00 are used. The surface should again be thoroughly dusted before stain is applied.

Extra care should be taken in sanding furniture, paper as fine as No. 0000 often being used on the hard woods. In factories, the dust that remains in the pores is blown out with air, while in the small shops it is thoroughly dusted out and rubbed off before stain is applied. To paraphrase the old proverb, "Finish in haste, repent at leisure," and all staining and finishing, though it be strictly a commercial piece of work, starts at preparation.

It is obvious that any stain having water for the vehicle will slightly raise the grain of the wood to which it is applied. One practice is to sand lightly, after the stain is dry, with No. 00 sandpaper. The purpose of the sanding is to smooth the grain, but it also has a tendency to cause highlights by removing some of the stain. With certain woods, such as quarter-sawed oak, and when some colors are used, the highlighting is a desirable feature. Quite often, when this method is followed, it is necessary to apply a second coat of stain. This coat, diluted with water so it will not obscure the grain, should be applied sparingly and by rubbing it on with a rag. There are times when this coat will also require a light sanding.

The method generally in use today is to give the surface of the wood a light brushing or sponging with water when the wood is dry and before the stain is applied, sanding to an even surface with No. 00 sandpaper. On some woods, the grain of which is readily raised by water, a light sanding may be required after staining.

Regardless of method, the sanding should never be done until the stain is thoroughly dry.

Some experienced finishers, when there are noticeable variations in the absorbing qualities of the wood surface, apply a sponge coat of water to the wood before applying the stain. The purpose of this coat is to make it possible to secure a more even distribution of the stain coat and a more equal penetration. The stain is applied before the water coat is dry.

The ability to apply water or acid stains in such a manner that one will secure a clear, smooth, nonlapping finish, one void of stain marks, comes only through painstaking care, practice, and experience.

The best way to use water or acid stains is to apply with a brush and then wipe off with a bunch of cotton waste or pad of cheesecloth. This serves to distribute the stain evenly and takes up the surplus moisture which might otherwise have a tendency to raise the grain of the wood.

The best practice is to use a wide, flat wall brush—one 4 to 4½ inches wide is not too large for trim work. Smaller flat brushes are used on furniture and small paneled work. Too large a brush is better than one too small. Be sure to use a flat brush.

To secure the necessary uniformity of distribution, be sure to apply stain with quick, long, full strokes. Do not flood the surface by working slowly. Oak, ash, walnut, and other open-grain woods soak up too much stain unless it is rapidly applied, and the result is too dark a color in places.

When applying water or acid stains, or oil stains, brush so as to avoid laps. Take a brushful of stain each time, but do not overload. Take up, as nearly as possible, the same amount in each brushful. Whenever possible, cover the entire length of the surface at one stroke. The right way is to brush from the dry wood toward the wet or stained surface. When brush stops are

necessary, make them at joints, corners, ends, mouldings, etc. If this is done, and there is careful brush work, the laps of wet stain on the partially dry stain are not so apt to show.

The reason for recommending wiping of the stain coat, when water or acid stains are used, is that it serves to evenly distribute and uniformize the stain; it reduces the possibilities of laps, or other defective marks, to the minimum; it produces a better effect and a superior piece of work in every way.

Water or acid stains instantly penetrate the wood, and so wiping immediately follows the application of the stain.

Oil stains, or water or acid stains, should be allowed to dry overnight before sanding, or before shellac, filler, or varnish coat is applied.

It takes more skill both to apply and wipe water or acid stains than it does to apply oil stains. Oil stains should also be applied with a wide, flat brush and then rubbed into the wood with a bunch of cotton waste, a pad of cheesecloth, or clean cotton rags. This method of application effectively obliterates brush marks and evens the color tone. The same full, long brush strokes used in applying water or acid stains should also be used in applying oil stains.

The one reason that oil stains are easier to apply than water or acid stains is that they do not penetrate so deeply or set so quickly, thus the finisher has more time to brush them on evenly. When reasonable care is taken with the work, they do not show laps or joints. Oil stains may be allowed to stand a quarter of an hour or so before being wiped; thus a finisher can brush a larger surface before wiping to uniformize the effect or remove excess stain.

Use only cotton waste, cheesecloth, or clean cotton rags in wiping or rubbing any kind of stain finish. Never use woolen cloth, waste, or rags. Lint from wool sticks to the stained wood and spoils the finish.

Never wipe harder on one part of a surface than on another. It is obvious that, by so doing, cloudy, mottled, or streaked surfaces will result.

If, after wiping on oil-stained surface, the color is too light, a second coat may be applied after the first coat is dry. If too dark,

some of the coat may be removed by wiping with a cloth slightly dampened with turpentine or with benzine. The finisher should be very careful, however, to wipe lightly and uniformly so as not to take off too much color or to cause spots or streaks.

Oil stains are packed in tin containers. Water or acid stains cannot be kept in tin containers, and, depending upon the formula, must be shipped and kept in glass, earthenware, or wooden packages. It must be remembered that water or acid stains cannot always be safely shipped during the winter months, as they freeze when exposed to a low temperature.

Water or acid stains, when kept in stock, should always be stored in a dark, warm room. The temperature should never be allowed to go below 50 degrees. Coloring substances in some stains are affected when constantly exposed to light, and so it is good practice to store all stains in a dark place.

Stain of any kind should never be applied in a cold room or to wood that is chilled. The room should be at least 70 degrees in temperature. Unless heat is on in the building, staining or finishing trim when there is frost in the air will usually result in unsatisfactory work. Good work always demands good working conditions. High-class, expert craftsmen, using the best material, cannot overcome the laws of nature and produce a fine finish when there is low temperature.

Remember, when applying stain, that it is an entirely different operation from applying the first coat for an enamel or a paint job. The slight defects in a first coat can be hidden by the other coats when an opaque material is used. A stain coat is to be followed by shellac or transparent varnish, and such coats will emphasize, rather than hide, any defects that may exist. There aren't any shortcuts in either workmanship or material in producing a good stained finish on any kind of wood for any purpose.

Berry Brothers S. D. C. Shellac

Berry Brothers S. D. C. Orange or S. D. C. White Shellac consists of pure gum shellac cut in pure 188 proof denatured grain alcohol. A dependable shellac for use in fine finishing wherever shellac is necessary.

Comes in 5-gallon, 1-gallon, ½, ¼, ⅛, $\frac{1}{16}$, $\frac{1}{32}$, and $\frac{1}{64}$-gallon containers.

Shellac and Its Use

Shellac is a resinous substance that is produced from stick lac, an incrustation deposited on the branches and twigs of certain species of trees in India and other eastern countries, through the action of the lac insect that feeds on the sap of the trees. Stick lac, after passing through a number of curing and refining processes, becomes the shellac of commerce. Orange is the natural color and White shellac is produced by chemically bleaching the Orange. Shellac flakes are soluble in alcohol but not in oil, turpentine, or benzine.

Pure grain alcohol is the best medium for cutting shellac, but its use for commercial purposes is prohibited by law. U. S. Government Formula Special No. 1 denatured alcohol—ethyl alcohol that has added to every 100 gallons thereof 5 gallons of wood alcohol—is the best available vehicle and cutter for shellac. Federal law requires a bond from all manufacturers using Formula Special No. 1 and the denatured alcohol must contain 2 or more pounds of shellac to the gallon. The law requires that denatured alcohol sold on the open market shall contain a greater per cent of wood

alcohol and other poisons, and so the finisher who purchases shellac that has been cut by a reputable manufacturer is assured of a better material than if he does his own cutting. Shellac cut in grain alcohol is easier to brush than it is when cut with wood alcohol. Only pure shellac should be used wherever specified in wood finishing and then only when specified.

Shellac has a very limited use in wood finishing, and, except where the finish is produced by the French polishing method, it is seldom that more than two coats are required. In most instances only one coat is specified and application of additional coats will injure the finish or detract from its appearance.

The one purpose of using shellac on stained work is to keep the stain from lifting during varnishing, and from bleeding into the varnish or into the paste filler.

Shellac does not produce a durable finish. It turns white when exposed to moisture. It does not produce a tough, hard, or permanent finish. It should never be used on exterior surfaces, or on interior surfaces that will be exposed to moisture, not even when it will be covered with varnish coats.

When applying shellac on a stained surface, use a soft, flat brush. A two or three-inch brush for small surfaces and a four-inch brush for large surfaces are usually the best widths. Shellac cannot be "stretched out" like varnish or paint. Because of the quickly evaporating alcohol it sets rapidly, and so very little rebrushing can be done. Work in one direction and as speedily as possible.

Any kind of stain should dry twenty-four hours, or at least overnight, before a shellac coat is applied.

The drying time required for a shellac coat depends upon the cut. A 2-pound cut will dry to sand in an hour or so. A 4-pound cut will require from four to eight hours to dry.

Shellac, when it becomes thickened, can be reduced with denatured alcohol. Do not use wood alcohol as it has a tendency to make the shellac coat tacky and prevents the coat from ever drying thoroughly hard.

Do not keep a shellac container open when not in use as the alcohol quickly evaporates and the gum becomes hard. This gum is worthless as it cannot be recut.

It is true that the shellac coat bodies up well and makes an ideal finish upon which to apply varnish, but on open-grain woods, filled or unfilled, many finishers prefer to omit the shellac coat and use an additional coat of varnish. This method is more conducive to the production of a lasting and durable finish.

Berry Brothers Paste Wood Filler

Berry Brothers Paste Wood Filler is used for filling the small crevices or pores that exist in all open-grain woods, leveling the surface, and thereby providing an even and smooth foundation upon which to apply the varnish coats. The use of paste wood filler prevents pitted or rippled varnish coats that would otherwise result from the varnish sinking into the pores. The decorative possibilities of paste wood filler are almost unlimited as the finisher can thus secure supplementary or contrasting tones that cannot be secured in any other way. Berry Brothers Paste Wood Filler is a superior compound, formulated and standardized for use in fine finishing. Under varnish coats, it is reduced to the desired consistency with turpentine. Where pyroxylin lacquer is used as the finish, pyroxylin paste wood filler must be used, or the paste wood filler must be reduced with pyroxylin lacquer thinner.

NOTE: Turpentine or benzine-thinned paste fillers are acted upon by the solvents in any pyroxylin lacquer. The lacquer solvents dry out the oil in the filler, the result being that eventually the grain of the wood shows through the final coats, with the same effect as though filler were not used. Paste wood fillers, thinned with pyroxylin thinner, make it possible to produce the desired result as there is an affinity between the filler and the finishing coats.

BERRY BROTHERS PASTE WOOD FILLER comes in the 6 following colors:

White Paste Wood Filler
Light Paste Wood Filler
Mahogany Paste Wood Filler
Natural Paste Wood Filler
Antique Paste Wood Filler
Dark Oak Paste Wood Filler

Comes in 100-lb., 25-lb., 5-lb. and 1-lb. containers.

The Purpose of Paste Wood Filler in Wood Finishing and How It Is Applied

BERRY BROTHERS PASTE WOOD FILLER comes in heavy paste form and must be thinned with turpentine or benzine before it is applied. Paste wood filler should be carefully thinned, for, though it must remain fairly thick, it must also be brought to a consistency where it can be easily brushed on the wood.

When the filler has been properly thinned it will set up a dead flat surface in from two to five minutes' time under normal drying conditions. If it settles in the open grain, leaving the liquid on top, then it is evident that the mix contains too much thinner.

It is good policy, when thinning paste, to have a sample of the wood at hand and try the mixture thereon. Thin to a fairly heavy body, test, then add a little thinner, test again, and so on until it is at the proper working consistency. It is easy to make a mixture slightly thinner, but it is difficult to bring too thin a paste back to a heavy body.

Oak, ash, elm, chestnut, and other woods having large pores require a thicker paste mixture than do walnut and other open-grain woods having smaller cells or pores.

Use a good, stiff, clean brush in applying paste wood filler. Thoroughly coat the surface and rub the filler well into the wood. First brush with the grain, lengthwise of the board, then lay off the coat by brushing across the grain. Be sure that the air is forced from the open grain or pores of the wood and that the filler is forced therein. This requires thorough, rapid, strong-stroke brushing.

Paste wood filler sets flat ready for wiping in from two to five minutes. The purpose of wiping is to completely remove from the surface all the filler that is not firmly embodied in the open grain or pores of the wood. Wiping is done across the grain of the wood in such a way that it will cut off all surplus filler sharp and level with the surface and without removing any of the filler from the grain or the pores. Sea moss, or upholstering burlap, is used as a wiper by furniture finishers, though most interior finishers, when working on trim, use pieces of burlap or excelsior. After wiping the required area with the coarse wiper to remove most of the filler, then wipe to a perfectly clean surface with cheesecloth or other cotton rags. Do not use woolen or linty rags.

Remember that paste wood filler sets fast. Do not apply more filler than can be wiped before it sets hard. Start to wipe where the brushing began. In other words, if one man is doing the work, brush for not to exceed four to five minutes, and then, if the first filler has set up, start to wipe.

Paste wood filler usually sets so hard in from fifteen minutes to half an hour that it cannot be wiped off.

When wiping, be sure to rub the filler well into the grain and pores of the wood. If the filler has been correctly mixed and thinned, it will roll up and come off the surface without any difficulty.

When the filler has become tough and does not easily wipe off, there has been too long a time allowed between brushing and wiping. If the filler has been applied to natural wood, or if there is a shellac coat protecting a coat of stain, then the filler can be washed off the surface with benzine, the surface allowed to dry, and a new coat of filler applied.

If the filler has thoroughly set and lifts out of the pores and grain when it is wiped, add a little Japan drier to the mixture, using only enough drier to secure the desired result, and test on a small piece of wood before applying to the work.

When applying paste wood filler it should be thoroughly stirred every three or four minutes. If it is not stirred often, the oil will rise to the top and the pigment will settle to the bottom. Keep a uniform mixture if the result is to be uniform.

Do not be in a hurry. Do not coat a large surface with paste filler until you have tried it out on a small surface. Mix, brush, allow it to set, and wipe before you go ahead with the work.

Berry Brothers Celebrated Varnishes

BERRY BROTHERS, INC., was founded in 1858, over seventy years ago, by two brothers, Joseph Berry and Thomas Berry, and the company is owned and controlled by their descendants. It is an independent organization—that is, it is not a part of any merger, consolidation, or combine. The policy established in the beginning, to make only the best possible products, is the policy today. Varnish was the first product of the company, and, though the line has been extended from time to time until it now includes practically all the commonly required brush-applied and spray-applied protective coatings, as well as a large number of specialties, the unequaled reputation of the company rests firmly on the sustained high quality of its varnishes. The various brands have been well and favorably known over a period of time sufficient to guarantee their durability and reliability to architects, painting contractors, decorators, manufacturers, and finishers in general.

In the manufacture of varnishes, color varnishes, and enamels, the aging, or ripening in the mass, is essential for the completion of chemical changes, necessary for stability and uniformity. The results obtained by following this aging process cannot be produced by any quickening process or by artificial means. Wholly dependent on the purpose for which the particular product will be used, this aging process must be maintained for from three to twelve months.

Berry Brothers plant, one of the largest of its kind in the country, is thoroughly modern and fully adequate in all its equipment. Aging or ripening facilities consist of a combined tankage capacity of one and one-half million gallons.

Equally important with the manufacturing facilities is laboratory control. This control begins with the formulation of product, determines the purchasing of the raw material and the exacting tests that it must pass before it can be used, then, with minute supervision, follows through every stage of production to final inspection at the time the product is placed in containers.

Berry Brothers maintains a group of chemical and physical laboratories, each having a distinct function confined to a particular branch of the industry, such as the manufacture of varnishes, lacquers, enamels, paints, shellac, etc. Most important of these is the Laboratory of Analytical Research and Manufacture, wherein new material and methods are analyzed and formulas are perfected before a product is merchandised under the Berry Brothers name.

To the purchaser and user of paints, varnishes, and nitrocellulose products, the reputation and experience of the manufacturer are of first importance. It is practically impossible to determine the quality of any brush-applied or spray-applied coating by chemical analysis. The only way to realize its value is through a long, actual service test. To be assured of the desired results, it is necessary for the purchaser to select well-known brands of recognized high quality and durability that have withstood thousands of practical tests.

Care should be exercised in selecting the right prod-

uct or brand, one fitted for the particular use to which it is to be placed. The manufacturer's recommendations, backed by intimate experience, should be the guide to selection.

One will appreciate that the world-wide reputation of BERRY BROTHERS is fully sustained by the uniformly high character of its products.

Luxeberry Wood Finish

(Trademark)

LUXEBERRY WOOD FINISH is an exceedingly high-grade varnish for use in finishing the finest of interior wood trim. It produces a very attractive, high gloss that can be rubbed to a high polish or to a dull finish. It emphasizes the grain and pattern of natural wood, develops and holds the beauty produced by a stain treatment.

LUXEBERRY WOOD FINISH, while producing a lasting and dependable finish, is distinctly an interior trim varnish and should not be used for floors, counter tops, church seats, school desks, exterior doors, etc. It is widely used by cabinet makers on fine work and by custom furniture makers.

LUXEBERRY WOOD FINISH is made only by BERRY BROTHERS and has been used throughout the United States and Canada, as well as in other parts of the world, for finishing the wood trim in leading architectural structures. It is not a new product; it has been recognized as standard by hundreds of thousands of expert finishers.

Color—Luxeberry Wood Finish "White" is very pale and is for use on light natural woods and over light tints of stains, while "Light" is suitable for use on dark woods and over the deeply shaded stains.

Surface Appearance—"Gloss," that may be rubbed to a high polish or rubbed dull. "Dull," that dries flat without rubbing. "Semi-gloss," closely resembling rubbed finish, is produced by blending 1 part "Gloss" and 3 parts "Dull." Regardless of the finish desired, "Gloss" is used for all coats except the final coat.

Drying—Dust-free in three hours, hard in twenty-four to forty-eight hours, and to rub in seventy-two hours, under normal drying conditions.

Covering Capacity—Six hundred square feet per gallon, one coat, on new work.

Application—Applied with brush or spray.

Package—In 5-gallon, 1-gallon, ½, ¼, ⅛, or $\frac{1}{16}$-gallon cans. Never sold in bulk or in barrels.

Liquid Granite

(Trademark)

Liquid Granite is a varnish of such remarkable toughness and elasticity that, while wood finished with it may dent under a blow, the surface will give under the pressure without cracking. This toughness of film makes it peculiarly adapted to the finishing of natural wood floors—it is, in fact, the best-known and most satisfactory floor varnish on the world markets. The reason for its wide use is explained in two words—IT WEARS.

The use of Liquid Granite is not confined to floors. The same characteristics that make it the ideal finish for floors also make it the best "General Purpose Varnish" that has ever been produced. It is widely used

on interior trim, especially on stair treads and risers, baseboards, doors, kitchen trims, windowsills, and similar parts in all classes of work where the finish is subjected to severe wear.

LIQUID GRANITE is used for finishing counters and other store equipment, school desks, restaurant equipment, etc. It is well adapted to surfacing linoleum and adds to its durability.

LIQUID GRANITE is a registered trademarked brand made only by BERRY BROTHERS. It has long withstood the test of time, is considered standard by experienced finishers, and is sold everywhere by dependable dealers.

COLOR—Medium light.

ADAPTABILITY—Finishing new floors and refinishing old floors, for use on interior wood trim especially where the surface is subjected to unusual wear. Equals any general purpose varnish in its resistance to water or moisture.

SURFACE APPEARANCE—"Gloss," that may be rubbed dull. "Dull," that dries flat without rubbing. "Semi-gloss," closely resembles rubbed finish and is produced by blending 1 part "Gloss" and 3 parts "Dull."

"Gloss" should always be used for foundation or first coat, regardless of the finish coat required.

NOTE: LIQUID GRANITE *"Dull" does not contain wax and is as durable as "Gloss."*

DRYING—Dust-free in four hours, hard in twenty-four to thirty-six hours, and to rub in seventy-two hours, under normal drying conditions.

COVERING CAPACITY—Six hundred square feet per gallon, single coat.

APPLICATION—Applied with brush or spray.

PACKAGE—In 5-gallon, 1-gallon, ½, ¼, ⅛, or $\frac{1}{16}$-gallon cans. Never sold in bulk or in barrels.

Liquid Granite Quick Drying

(Trademark)

This varnish is Liquid Granite in quality but is so formulated that it dries in a very short period of time. The drying characteristic makes it the ideal finish to use on new work that must be ready for service at a specific date and for rehabilitating and refinishing purposes. As it dries dust-free in two hours and is hard for use overnight, it is especially applicable for use in stores, schools, office buildings, theatres, apartments, and hotels. Counters, school desks, etc., can be refinished at night and placed in service the next morning. Floors can be given a restoring coat and be ready to use in from four to six hours. It is a high-grade varnish for use where time is an important consideration. It is not a lacquer, has no disagreeable odor, causes no unusual fire hazard, and does not require a special thinner. May be rubbed when required.

Color—Medium light.

Adaptability—Used on floors, interior trim, and all other interior wood surfaces.

Surface Appearance—"Gloss," that may be rubbed dull. "Dull," that dries flat without rubbing. "Semi-gloss," resembles rubbed finish by blending 1 part "Gloss" and 3 parts "Dull."

Drying—Dust-free in a few minutes, hard for recoating or for use in from four to six hours, hard to rub in twenty-four hours, under normal drying conditions.

Covering Capacity—Six hundred square feet, single coat, per gallon.

Application—Applied with brush or spray. Brushes on easily without producing brush marks or laps.

Package—In 5-gallon, 1-gallon, ½, ¼, ⅛, or $\frac{1}{16}$-gallon cans. Never sold in bulk or in barrels.

Berryspar

(Trademark)

BERRYSPAR is a high-grade spar varnish of unusual characteristics. It is especially formulated to resist moisture and will not turn white. It can be used on all exterior or interior wood trim, but is particularly applicable to surfaces exposed to moisture, such as doors, windowsills, sash and frames, baseboards, furniture, etc.

COLOR—Light or pale.

ADAPTABILITY—Exterior and interior surfaces, except floors.

SURFACE APPEARANCE—Gloss, or may be rubbed dull.

DRYING—Dust-free in two hours and hard in from eight to twelve hours, under good drying conditions.

COVERING CAPACITY—Six hundred square feet, one coat, per gallon.

PACKAGE—In 5-gallon, 1-gallon, ½, ¼, ⅛, or $\frac{1}{16}$-gallon cans. Never sold in bulk or in barrels.

Luxeberry Spar Varnish

(Trademark)

This varnish is especially formulated and produced to withstand exposure to weather. It is for use on exterior doors, storefronts, boats, and all other surfaces that involve resistance to severe outside conditions and unusual wear. It will not turn white on contact with water, makes an attractive and lasting finish, one possessing real durability. An outdoor and marine spar varnish that dries with a gloss. Not to be rubbed.

COLOR—Medium light.

ADAPTABILITY—To exterior surfaces exposed to weather.

SURFACE APPEARANCE—Dries with a gloss. Should be applied directly to surface of wood without inter-

mediate coat of any kind. Three or more coats are needed on new work to secure best results. Should not be rubbed.

Drying—Dust-free in twelve hours, hard to recoat in forty-eight hours, and for use in seventy-two hours, under normal drying conditions.

Covering Capacity—Four hundred and fifty square feet of surface, one coat, per gallon.

Application—Brush.

Package—In 5-gallon, 1-gallon, ½, ¼, ⅛, or $\frac{1}{16}$-gallon cans. Never sold in bulk or in barrels.

Selection of Varnish and Its Proper Application

What is varnish? Varnish is a liquid, free from pigment, that can be thinly spread on a surface in a homogeneous film that, when dry, results in a continuous transparent or semitransparent coating.

The first purpose, when applied to wood, is to protect the surface from the destructive effects of the elements that would otherwise warp, swell, check, and raise the grain of the wood, and from discoloration of the wood that would result from gases ever present in the air.

Varnish develops and emphasizes the grain and pattern of the wood to which it is applied, and, if the wood is stained, adds a brilliancy to the color that it would not otherwise possess. When varnish is applied to an opaque surface, it produces a depth of color tone that enlivens and beautifies.

There are several hundred kinds of varnishes, but those in which the average reader of this book is interested are architectural and finishing varnishes. These varnishes are made from various gum resins and vege-

table oils, combined through the application of heat, and having added thereto the necessary thinner and drier.

Not so long ago varnishes were designated as long-oil, medium-oil and short-oil varnishes. The long-oil were for exterior use and included spar, automobile, wagon, and similar varnishes. The medium-oil included the interior architectural and cabinet varnishes. The short-oil were those that had to take a very high polish through rubbing and were used in furniture finishing, piano finishing, etc. These terms are no longer in general use because varnishes are purchased on results produced and not by general or standardized formulas. When purchasing, the important considerations are the integrity and the dependability of the maker of varnishes and the selection of a varnish made for the particular purpose for which it is to be used.

An authority writes: "The specifying of varnish ingredients is of no practical use since in the completed product the original ingredients have been subjected to complete change and therefore no longer exist. Different treatments of the same material invariably yield different products that necessarily produce different results.

"The durability of varnish, for example, depends, in addition to the careful selection of the material, more especially on the treatment of the materials and particularly treatments involving heat. Varnish and lacquer deterioration results chiefly from chemical change—the more successful the process of manufacture has been in forming stable compounds, the more assurance is there that further change will not take place on exposure.

"Only those products which involve no extensive chemical change can be successfully analyzed and duplicated on a laboratory scale. Products which will require high temperature or long ripening cannot be analyzed and duplicated. Chemical analysis of varnish, therefore, is not possible. Metallic salts and volatile constituents can be separated and determined, and from the presence of certain inorganic compounds the use of some materials may be indicated, but these furnish little to indicate the actual quality of the varnish."

The varnish user must depend upon the reputation of the manufacturer if the finished work is to prove satisfactory. Use a varnish from a dependable manufacturer; use it only for the purpose for which it is made, and use it in keeping with the directions printed on the container.

Do not use a fine finishing varnish like Luxeberry Wood Finish on floors or on exterior work. Use Liquid Granite on floors and Luxeberry Spar or Berryspar on exterior work. Do not use an exterior spar varnish, one that is not made to rub, on interior trim or on floors. Use only high-grade varnishes. Cheap varnishes take as long to apply, and sometimes a great deal longer, as high-grade varnishes. It costs money to recoat a surface where cheap varnish goes wrong, and a reputation for good work is worth more than the few cents in the cost of material.

Varnish Defects That Can Be Avoided

BLOOM—Opalescence of surface caused by contact with moisture (excessive humidity) before complete drying. It may occur intermittently as a temporary phenomenon, disappearing on drying. If ammonia is present in the atmosphere, the change is chemical and may be permanent.

BLISTERING—Formation spots on the surface. Possibly due to underlying spots of grease, sap, or moisture; excessive heat or direct sun exposure during the process of drying.

SPOTTING—Discolored spots on the surface. Possibly due to extreme cold; excess of hard gums in the particular varnish or selection of a varnish of insufficient elasticity for the particular use.

CRAZING—Minute interlacing cracks on the surface. Possibly due to extreme cold; excess of hard gums in the particular varnish or selection of a varnish of insufficient elasticity for the particular use.

SWEATING—Reappearance of luster on a rubbed-to-a-dull-finish surface. Most frequently due to application of last coat before undercoats have been properly hardened.

POWDERING—Gradual crumbling of the varnish into dust. Possibly due to the selection of an improper varnish for the particular use (interior varnish for exterior use) or to accidental or abnormal exposures.

CRAWLING—Refusal to spread or flow smoothly on a surface. Possibly due to excessive viscosity of the varnish or the condition of the surface itself, such as low temperature, moisture, grease, etc., especially where the surface is highly polished.

CRACKING—Intensification of crazing and due to the same causes.

CHIPPING OR FLAKING—Often follows cracking.

DEADENING—The opposite of sweating. Possibly due to the insufficient or defective undercoat, but most frequently due to improper filling of the wood.

TACKINESS—Adhesive property of incomplete drying. After setting, varnishes retain tackiness until

completely dry. Slow-drying varnishes remain tacky longer than quick-drying. A slight rise in temperature may cause recurrence in some varnishes, though not objectionable in spar. Proper selection of varnish for its particular use is essential. Tackiness frequently occurs in refinishing old work due to application of varnish over unclean, greasy surfaces when complete removal of old coat is the only remedy.

Pitting or Pinholing—Due to changes in atmospheric conditions during drying; wood not properly filled; using a mix of different grades of varnish; application of a coat over one that is sweating; incompletely dried undercoats or working in a humid atmosphere; rubbing through to undercoat; dirty or frothy varnish; underlying spots of grease or soap; cold drafts.

Enameling or Silking—Appearance similar to enameled leather or silk. Due to application of varnish in hot, humid weather; too long, continued brushing; use of brushes saturated with oil; using mix of different grades of varnish.

Clouding—Loss of luster. Due to application of varnish over unseasoned wood; imperfectly dried or, more frequently, porous undercoats. Coal gas may cause clouding.

Seeding or Sandy Varnish—Varnish may be found full of small grains. Due to chill in transit or in storage, or a decided difference in temperature between the varnish and the work. Same appearance may be caused by defective or uncleaned brush.

Runs or Sags—Irregularities of surface. Due to uneven flowing; application of too much varnish; incomplete brushing; an inelastic brush. When fresh, they may be wiped off with turpentine. If in the finishing coat of gloss varnish, removal of coat is necessary on fine work. If the coat is to be rubbed, rubbing will remove them.

Wrinkling and Crimping—Conditions similar to runs and sags. Generally due to same causes, but chiefly due to an attempt to substitute a few heavy

coats of varnish for a greater number of thin, properly applied ones. Also due to sudden lowering of temperature when varnish is freshly applied.

BRUSH MARKS—Marks of brush due to working after the varnish has begun to set. In rubbing coats, they may be removed in the rubbing. Brush marks will show through the subsequent coats. Each coat, therefore, must be smooth for perfect results, and the first coat in this respect is equally as important as the last.

RIBS—The result of brush marks in undercoats. Often due to the use of rubbing varnish of an excessive body.

GRAIN SHOWING—The result of lack of sanding after staining and filling. Both of these operations may raise the grain of the wood surface, though it may have previously been in perfect condition.

CRUMBLING OR PERISHING—Gradual loss of luster, finally resulting in disruption of surface and complete destruction of varnish. Quite often the result of washing with water heated above a tepid degree. Also due to ammonia fumes, coal gas, salt sea air, or soil in limestone localities.

Applying Varnish

The first consideration in varnishing is temperature. The temperature of wood to which varnish is to be applied should never be lower than 70 degrees F., and, if other general conditions are ideal, it is better if the temperature is 80 degrees. The varnish should be as nearly as possible of the same temperature as the wood, never cooler.

Varnish is very susceptible to atmospheric conditions and to temperature. It cannot dry in a cold room or be properly spread when cold. If stored in a cold room, or exposed long enough to become thick, it should be allowed to stand in a warm place until regaining its normal consistency.

Do not try to bring varnish that has been thickened by cold to proper working consistency by merely reducing with turpentine.

This may be a quicker way of preparing it for the brush, but it will spoil the work, create unnatural conditions, and injure the luster.

The best way is to set the varnish container in a pail of hot water, about 110 degrees F., or set the can near a hot radiator for a day or so—never directly on the radiator, or directly on a hot stove, or near a fire of any kind.

If the varnish has been subjected to zero temperature, be sure to use the hot water method of bringing it back to normal thinness. Then strain through a double thickness of cheesecloth. If this is not done, the varnish is apt to produce a sandy effect.

The expert workman, using the best varnish, cannot do good work in a cold room. Applying any varnish in a structure that is not properly heated during cold weather will naturally result in unsatisfactory work.

Cold, misty days and hot, humid days greatly affect freshly varnished surfaces. Keep all windows closed when there is an excessive humidity.

Ventilation is very important, as varnish dries because of the evaporation of the volatile thinners. Unless the air is changed, the process of evaporation exhausts the oxygen in the air and the drying is greatly delayed. Drafts that blow directly upon fresh varnish have a tendency to cause it to dry flat, and so, while there must be plenty of air, there should never be drafts. Then, too, the air must be so regulated that it will not reduce the temperature of the room.

Do not use mixed varnish—that is, while you can mix Liquid Granite "Gloss" and Liquid Granite "Dull," you should not mix Luxeberry Wood Finish and Liquid Granite. Do not mix varnish of any kind from one manufacturer with that of another. There are many reasons why trouble will always result.

Keep original cans properly corked at all times. If not corked, air will enter, causing the varnish to skin over. If for any reason varnish becomes skinned, be sure to strain through silk or fine muslin.

An authority on finishing says: "A good finisher is always a crank about perfection in cleanliness, and, first of all, he has thoroughly clean brushes and clean tools."

A finisher, before applying varnish, should see that the surface

is perfectly clean, and the cleaning should take place a few minutes before varnish is applied. A great deal of dust and grit may settle on a surface in a few minutes. Use duster before the first coat as well as each succeeding coat. A duster brush is a necessary tool to every finisher and should be used every little while. Finishers who take a real pride in their work use a piece of cheesecloth, slightly dampened with turpentine or benzine, to wipe off a surface immediately before varnishing. This wiping, however, is omitted over unprotected oil, water or acid-stained surfaces. Shellac coats may be wiped. Be exceedingly careful that dust, grit and dirt are removed from all corners, cracks, around hardware, etc. A clean brush is an absolute necessity.

Remember that high-quality varnish is clean when it leaves the aging tanks and is packed in thoroughly clean cans. Be sure to keep it clean. Be sure the varnish pot is clean. A clean pot is one that is as free from other substances of any kind as though it were new. Before filling with varnish, be sure to wipe the pot inside and outside with a cloth to remove any dirt, dust or grit.

Clean varnish, clean pot, clean tools and clean surfaces are necessary if there is to be clean work.

Wood must be thoroughly clean, free from dust, grease and other foreign substances. Wood must also be thoroughly dry.

Cracking, flaking, crazing, etc., are often the result of applying varnish over surfaces that are not hard dry. Stain, filler, shellac, paint, enamel, wood, plaster, or metal must be dry before any first or succeeding coat of any kind is applied.

"Not Dry" is a red flag to every experienced finisher and, regardless of who urges him to go ahead, he knows that to do so will only result in trouble. Ninety-nine times out of a hundred, when a coat is applied over one that isn't thoroughly dry, it means taking off all coats, getting down to the surface, and doing the work over again. Such procedure is far more costly than waiting for a coat to become dry.

Varnish, as it comes from the manufacturer, is of the right consistency to use. It is ready for the brush and should never be thinned for second, third, or succeeding coats. For use as first

coat on oak, maple, birch and other hard woods to be finished in the natural wood, it may be thinned with turpentine for the first coat. One-quarter of turpentine to three-quarters of varnish produces a mix that is greatly superior to shellac for filling the pores and grain and for producing a surface for the succeeding coats. Be sure the varnish thus mixed is the same kind as will be used for the finishing coats, and remember that the succeeding coats are not to be thinned.

When applying do not wipe the brush on side of pot to remove excess varnish. Dip the brush so as to take up enough varnish, but without overloading, and thus avoid wiping. Varnish is thus kept free of air bubbles that often make it difficult to lay off the coat.

Apply to one board or panel at a time and with quick strokes. Distribute the varnish over as large a surface as the brush load will cover without stretching, brushing with the grain. With the empty brush, now brush across the grain of the wood. The coat should be evenly distributed by brushing and may be struck off to a finish by again lightly brushing with the grain and using only the tip of the bristles.

Apply the next brushful the same way, repeating until a fair surface is covered. Now take your empty brush, wipe it out on edge of pot, if necessary, go over the entire surface, and, brushing with the grain of the wood, pick up any runs or sags. Light strokes that merely touch the surface are best for this final brushing. Do not cover too large a surface or the varnish will set and become sticky.

Be sure to use less varnish, brushing it out thinner for the first coat. Three thin coats of varnish will produce a far better piece of work than two heavy coats, and four thin coats a better appearing surface than one thin and two heavy coats. This does not mean to thin the varnish. Rather to brush out the coats so there is complete coverage of the surface but without allowing the varnish to pile up in spots. Thick coats cause the varnish to form runs, sags, wrinkles, etc., that spoil the appearance of the finished work.

Be sure to take good brushfuls and cover as large a surface as possible with each stroke. Varnish is not rubbed in like paint but is evenly distributed over the surface with bold, free strokes and then laid or struck off with light, quick, smooth strokes.

Berrycraft Varnish Stains

(Quick Drying)

Varnish stains are varnishes to which stain has been added, thus making it possible to produce the desired color and a gloss finish in one coat. Varnish stains are used to some extent by manufacturers of low-priced furniture, and where staining, filling, and varnishing would make the resale price prohibitive. They are used now and then by painters in refinishing old floors, trim, etc., but the widest and most general use is by men and women for refinishing household furniture, floors, toys, etc., and by those who know little about using coatings in a workmanlike manner.

BERRYCRAFT VARNISH STAINS, QUICK DRYING, are easy to use and apply. They stain and varnish in one operation, and are BERRY BROTHERS quality, carefully made from thoroughly tested, high-grade material. They are very clear and transparent, and, when used in keeping with directions, produce satisfactory results. Adaptable to all kinds of interior use. They dry nicely in two to four hours and produce a smooth, lustrous finish that is both artistic and durable; the varnish base is one that possesses long-wearing qualities. They come ready for the brush, put up in handy, friction-top cans that are easily opened, and quickly and securely closed when not in use. These stains are applied in the same manner as paint or varnish and no special skill is required in their application.

BERRYCRAFT VARNISH STAINS, QUICK DRYING, come in the following colors:

Light Oak	Cherry
Dark Oak	Mahogany
Golden Oak	Rosewood
Walnut	Undercoat

The undercoat is for use as a first coat on surfaces that have been previously painted or stained and varnished. It is not necessary to use the undercoat on new work.

Berryloid Clear Lacquers

THE material known today as lacquer is a comparatively modern development. The basic raw material, nitrocellulose, has been made commercially and used as a coating material for many years, but certain recent developments, namely, a process of lowering the viscosity and the introduction of low-priced solvents, have greatly increased the field of usefulness of nitrocellulose lacquers.

Clear Lacquers consist of the following ingredients:

1. Nitrocellulose.
2. Resins.
3. Plasticizers or softening agents to keep the film from becoming brittle.
4. Solvents. These are used to dissolve and blend the various solid ingredients and make it possible to apply the lacquer by spray or brush methods to the surface to be coated.

Lacquers both clear and colored are best applied by spray methods. The drying time of these products is too short to allow really good brushing on large surfaces. Good results can be secured, however, on surfaces not too large by a competent brush hand. Clear Lacquers are usually supplied at spraying consistency and need not be thinned except for use with certain types of spray equipment which will not handle anything but very low viscosity materials.

The finishing schedule does not differ from that used with oil varnishes so far as stain and filler coats are

concerned. If possible, acid stain should be used in preference to oil stains as the latter bleed worse through lacquer coats than through varnish. The filler is applied in the usual way and should be thoroughly dry before the lacquer is applied.

In a specially designed, constructed, and equipped plant, Berry Brothers manufactures, under the trademark name of Berryloid, nitrocellulose lacquers for every purpose.

To describe each Berryloid Lacquer, and give specifications for its use, would require a book as large as, if not larger than, this one.

Berryloid Lacquers are used in finishing wood and metal surfaces of every description. Seventy-five per cent of the airplanes built in the United States are finished with Berryloid Lacquer and it is extensively used in finishing and refinishing automobiles.

It is also widely used in furniture and radio cabinet finishing, on store fixtures, etc., and is used by manufacturers of electric fixtures and similar metal products. Lead pencils, toys, leather goods, and a thousand-and-one other articles of commerce are finished with one or another of the Berryloid Lacquers.

Berryloid Lacquers are used to some extent in architectural finishing and decorating, especially where the finish is applied at mill or shop. It is quite widely used on floors of selected maple and the other light woods where the natural color is to be preserved. Berry Brothers invites manufacturers, architects, designers, finishers, and painters interested in the use of nitrocellulose lacquers to write in detail regarding their respective needs and are assured that they will receive detailed replies.

Berrycraft Linoleum Lacquer

BERRYCRAFT LINOLEUM LACQUER, as its name implies, is an especially formulated nitrocellulose lacquer for use on linoleum and other floor coverings of a similar nature. It produces a clear, transparent finish that will not discolor the surface to which it is applied, and insures a tough, marproof, elastic coating with great resistance to wear.

BERRYCRAFT LINOLEUM LACQUER dries in thirty minutes and thus makes it the ideal material for floors in homes, doctors' offices, shops, beauty parlors, corridors, display rooms, and other floors covered with one of the smooth-finish, decorative floor materials. It dries with a semi-luster.

BERRYCRAFT LINOLEUM LACQUER is made for brush application and is widely used for finishing hardwood floors where it is desired to have them remain in the natural color. It is also used for finishing small surfaces of wood where a clear, transparent finish is desired.

BERRYCRAFT LINOLEUM LACQUER comes in 1-gallon, ¼, ⅛, or $\frac{1}{16}$-gallon cans.

Directions for Use

This lacquer is designed for brush application, but can be sprayed without difficulty. If sprayed, it should be thinned 20 to 30 per cent with BERRY'S LACQUER REDUCER.

Whenever thinning is necessary, use only BERRY'S LACQUER REDUCER.

It is important that the surface over which the lacquer is to be applied be *absolutely clean and free from grease, wax, and moisture.*

For brushing, apply freely and brush out only enough to spread evenly.

It dries in 30 minutes to recoat and can be walked upon in one hour after final application. Two coats should be applied for a first-class, satisfactory finish. The second coat should be applied as rapidly as possible, so as not to lift or disturb any of the first coat.

Do not sand or in any way treat or disturb the first coat.

The brush should be cleaned with Berry's Lacquer Reducer, as other reducers will make the brush unfit for future use.

Remember, Berrycraft Linoleum Lacquer is very clear, pale, elastic, durable, waterproof, transparent, and will withstand a great deal of ordinary service. It is thus especially adaptable to all printed and plain smooth-surface floor coverings having a base of cork, burlap, or felt paper.

In finishing new floors of close-grained hardwoods, it is applied directly to the wood without any foundational coating of any kind. The wood should, of course, be carefully sanded, dusted, and be thoroughly clean.

Berry Brothers Celebrated Enamels

EVER since the beginning of time man has admired and has striven to achieve the beautiful. Here and there nature produced smooth, even surfaces of one clear tone and without spot or blemish. What is more natural than that man should have desired such pleasing surfaces within his place of residence, or in other structures which he wished to be exceedingly attractive. At first he could only produce such surfaces of fine, polished stone, or, at best, of plaster. However, with the commercial development of paints and varnishes, it became possible to finish wood, metal, plaster, or other surfaces to a smooth, even tone and the desired color in a far more economical and equally satisfactory way.

In these days, in the modest home structure, as well as in the finest of public and semi-public buildings, the architect, decorator, painter, or owner can secure the highest type of pleasing opaque surfaces through the use of enamels.

Enamels that are rightly entitled to the name are not paints. Paints have oils as the vehicle, while all true enamels have varnishes as a base. Paints are decidedly opaque and either dry flat or with but little luster. Enamels are only semi-opaque, thus necessitating application over an opaque foundation coat, and dry with a pleasing luster, a uniformity of finish, a depth of tone, and a richness of surface appearance which cannot be produced in any other way.

The range of use of enamels is as great as that of practically any other brush-applied or spray-applied decorative and protective coating. They are not only used on interior trim, from entrance halls and drawing rooms to kitchens and bathrooms, on store and shop trim, walls, and counters, in library, school, church, and other public structures, but they are used on various period furniture, household equipment, machinery, etc.

Berry Brothers Enamels are distinctly high-grade and worthy of the name they bear. Architect, designer, decorator, and finisher can depend upon them to produce the best possible results if used in keeping with specifications and directions.

Luxeberry Enamel

(Trademark)

(Gloss and Eggshell)

Luxeberry Enamel is for the finest type of finish wherever an enamel is required. It is a long-oil varnish base rubbing enamel and produces a smooth, tile-like surface, one that will not discolor, crack, or peel, and that is very durable. When necessary it can easily be cleaned by a gentle application of pure soap and water. Luxeberry Enamel, while highly decorative, also possesses the characteristic of drying firm, hard, and elastic. It has long-wearing qualities.

Luxeberry Enamel comes in White, Old Ivory, and Rich Cream.

ADAPTABILITY—Exterior and interior woodwork trim of the highest class, fine metal sash, etc. Also for plaster surfaces, bathrooms, kitchens, etc.

SURFACE APPEARANCE—High Gloss which may be rubbed dull. Eggshell (semi-gloss) which closely resembles a rubbed finish without the expense of rubbing.

DRYING—Dust-free in four hours, hard in twelve hours, under proper drying conditions. Drying to rub in about twelve hours.

COVERING CAPACITY—Six hundred square feet per gallon, one coat.

APPLICATION—Applied with brush or spray. It is full-bodied and flows freely without brush marks.

PACKAGE—In 1-gallon, ½, ¼, or ⅛-gallon cans.

Berrycraft Quick Drying Enamel

(Gloss)

BERRYCRAFT QUICK DRYING ENAMEL is produced under a new process of manufacturing and one that makes it possible to recoat, or to use surfaces or articles finished therewith, in four hours. It is distinctly an enamel in all its characteristics, possesses a varnish base, and should not be confused with nitrocellulose lacquers. It is free from disagreeable odor, does not require a special thinner, and is not an unusual fire hazard. Standard thinners, such as turpentine, can be used as a reducer when necessary, and brushes can be cleaned with the same thinner.

BERRYCRAFT QUICK DRYING ENAMEL brushes on easily and can be used on large surfaces without show-

ing brush marks and laps. It is easy working and does not pull on the brush.

The hiding or covering qualities are exceptionally good. In some colors one coat is sufficient. It is seldom necessary to use more than two coats. It can be applied to old painted or varnished surfaces without lifting the old coats, and can be used on all interior surfaces whether new or old, wood, cement, metal, fiberboard, masonry, or plaster.

It is waterproof; will not turn white; is not affected by hot or cold dishes being placed thereon.

Berrycraft Quick Drying Enamel comes in White, Black, and the following attractive colors:

Old Ivory
Yale Blue
Sky Blue
Jade Green
Wild Rose
Berry Brown
Silver Gray
Buttercup Yellow
Ripe Orange
Chinese Green
Oriental Red
Orchid

Adaptability—Made to meet the modern demand for speed for both exterior and interior use. Particularly adapted to apartments, hotels, stores, etc., for interior trim, plaster, and furniture.

Surface Appearance—Gloss which may be rubbed dull. Berrycraft Quick Drying Enamel, though it dries to recoat in four hours, requires twenty-four hours' drying time before it can be rubbed.

Drying—Dries dust-free in a few minutes, hard enough to recoat in four hours, under normal drying conditions.

Covering Capacity—Six hundred square feet per gallon, one coat.

Package—In 1-gallon, ¼, ⅛, $\frac{1}{16}$, or $\frac{1}{32}$-gallon cans.

Berry Enamel Undercoat

(Semi-flat)

A highest-grade enamel, like LUXEBERRY ENAMEL, requires an undercoat as a surfacing and opaquing agent. The enamel is only semi-opaque, and, unless a good foundation is built up, satisfactory results cannot be secured.

BERRY ENAMEL UNDERCOAT is a specially formulated, triple-ground undercoat of the highest quality. It has great opacity and flows so smoothly without brush marks that it requires, when properly applied, little or no sanding to provide a perfect surface for the enamel.

BERRY ENAMEL UNDERCOAT should always be used on new work of any kind where the best results are desired.

COLORS—Made in White, to be tinted to the desired tone with colors ground in oil. Can be obtained colored to match the standard enamels, or in special colors, in lots of fifty gallons or over.

ADAPTABILITY—As undercoats for the highest type of enamel finish.

SURFACE APPEARANCE—Semi-flat.

DRYING—Dust-free in three hours, hard in eight hours, under normal drying conditions.

COVERING CAPACITY—Five hundred square feet per gallon, one coat.

APPLICATION—Applied with brush or spray.

PACKAGE—In 1-gallon, ½, ¼, or ⅛-gallon cans.

The Use and Application of Enamels

The first thing to remember is that an enamel is not made with oil and should not be mixed or reduced with it. Oil will ruin the enamel, and such a mixture will only result in a gummy, sticky surface. If it is necessary to thin enamel, use only pure turpentine.

On new work all surfaces require the same careful preparation as is required for a varnish finish. If the surface is wood, it should be carefully sanded to a smooth finish before undercoat is applied. Regardless of the quality of the undercoat, or the number of coats applied, it cannot overcome uneven or rough surfaces.

Be sure all surfaces are thoroughly dry before applying undercoat or enamel. Also be sure they are thoroughly clean.

Only close-grained wood should be used for new work where enamel is to be the finish. Birch is undoubtedly the best wood in general use for the purpose, though satisfactory results are produced on maple, soft pine, fir, poplar, redwood, and gum.

After the wood is cleaned and sanded, touch up all the knots and sap streaks with thin orange shellac.

Where the very finest type of work is desired, that is, in mansion-type residence, or in public building where the decorations are of the highest order, at least four undercoats and two coats of enamel are used. Each undercoat is allowed to become thoroughly dry, sanded with No. 1/2 sandpaper, and dusted before the succeeding coat is applied.

The last undercoat should be sanded with No. 0 or No. 00 sandpaper to smooth, even uniformity, then wiped free from dust with a chamois skin.

Enamel should not be brushed on like paint, but should be flowed on in the same manner and with the same stroke as is used in applying varnish. Excess enamel should be picked up with tip of brush and the surface lightly stroked in the same manner as a varnish coat is given the finishing touches.

If a dull finish is required, the final coat should be given several days to become thoroughly bone-dry, and it should be rubbed with FF pumice stone and water on a felt pad.

The standard specification for the greater part of enamel work calls for but three coats of undercoating and two coats of enamel. The sanding specification is the same. If a semi-dull finish is required, LUXEBERRY ENAMEL, EGGSHELL, is used, thus eliminating the necessity of rubbing.

When enamel is to be applied over old paint, varnish, or enamel, the surface should be thoroughly sanded so as to remove all gloss. If surface was waxed, or if finished with flat varnish, all wax must be removed, the surface thoroughly sanded, and then washed with turpentine or benzole. A new brush-applied or spray-applied coating of any kind, paint, varnish, enamel, or lacquer, will not adhere to a waxed surface.

If the old varnish, paint, or enamel is cracking or scaling, it should be entirely removed, the surface thoroughly sanded, and the enamel finish built up the same as for new work.

When the wood has been stained mahogany red, or any tone that has a tendency to bleed, the surface, after it is cleaned and sanded, should be given a single coat of LIONOIL CLEAR, and allowed to hard-dry before the undercoat is applied.

Where a stain used on the wood has a tendency to bleed, and, because of cracking, crazing, or scaling, it is necessary to remove the old coat, it is good practice to remove as much of the old stain as possible by washing the surface with alcohol, benzole, or benzine. The wood should then be thoroughly sanded, dusted, and given a coat of LIONOIL CLEAR before the undercoat is applied.

If the wood to be refinished is oak, or any other open-grained wood, and is varnished, care should be taken to see that the surface is smooth, even, and in first-class condition. Unless it is, the pattern of the wood will have a tendency to show through the enamel finish, and such a result is anything but attractive.

If the old finish is in such a condition that it has to be removed, then the grain should be refilled, shellacked, and one coat of varnish

applied and allowed to dry before the undercoat is brushed or sprayed on. The varnish coat should have a light sanding.

When the finish is of enamel, and in good general condition, but needing "freshening up" or restoration, all that is necessary is to thoroughly wash, touch up any damaged spots to even the surface conditions, and apply one coat of enamel.

The above general directions apply to the use of Luxeberry Enamel in particular and to fine enamels in general. Luxeberry Enamel is for fine new work, and for refinishing, where the highest decorative values are desired. It is taken for granted that the greatest of care, and all the time necessary, will be used for each operation. The colors are soft tints, the finish has the depth of tone that can only be produced with a truly fine material, and, when the workmanship is of a high order, the result is the most pleasing opaque finish that it is possible to secure with brush or spray. Such a finish has great resistance to wear and to temperature changes. It is so long-lasting that it is close to everlasting.

Berrycraft Quick Drying Enamel is of wider and greater utility. It possesses a heavily pigmented body and is more opaque than Luxeberry Enamel. In the majority of refinishing operations it is applied directly to the surface without the necessity of undercoats being used, but when such a coat is needed, as on new work, two coats of Berrycraft Flat Wall Finish, or Berry's Enamel Undercoat, are recommended.

On new work the undercoats should be slightly sanded in the same manner as for the more transparent enamel.

Where Berrycraft Quick Drying Enamel is to be applied over mahogany-finished wood, the surface should first receive a coat of aluminum bronze. When the bronze is dry,it should be followed by one or two coats of the desired color of enamel.

The quick-drying feature of Berrycraft Quick Drying Enamel makes it the móst desirable method of refinishing apartments, houses, stores, etc. Any place for rent or for lease can be decorated for tenant in less than twenty-four hours.

For finishing bathrooms, kitchens, etc., it is the ideal material. It comes in the pleasing pure colors now so much in demand and it dries with the high gloss that only a pure varnish enamel possesses. It is also the most convenient method of finishing store shelving, counters, show windows, display forms, etc. It is a wear-resisting, water-resisting enamel and will serve and last under severe conditions.

BERRYCRAFT QUICK DRYING ENAMEL is widely used in finishing and refinishing furniture, breakfast sets, flower boxes, woodwork, metalware, wicker furniture, bathroom fixtures, doors, stairs, porch furniture, and for all interior purposes.

Berryloid Quick Drying Automobile Enamel

(Oil Base)

BERRYLOID QUICK DRYING AUTOMOBILE ENAMEL is distinctly a BERRY BROTHERS product and one specially formulated for refinishing and for touching up motor cars, trucks, etc. Applied with a brush as readily as with a spray and is made to serve anyone not having the equipment to use nitrocellulose lacquer. It does not require a special thinner or cause extra fire hazards. Can be applied in shop or garage by anyone who can brush-apply paint to varnish.

BERRYLOID QUICK DRYING AUTOMOBILE ENAMEL dries dust-free in two hours under ordinary drying conditions and is ready for the road in four hours. It dries with a fine, deep luster, which produces a very attractive and pleasing finish.

BERRYLOID QUICK DRYING AUTOMOBILE ENAMEL comes in Black, White, and the following 10 attractive colors:

Light Blue	Gray
Auto Blue	Berry Red
International Orange	Cream
Yellow	Berry Brown
Light Green	Battleship Gray

These colors match those of the same name in Berryloid Lacquers.

Comes in 1-gallon, ¼, ⅛, or $\frac{1}{16}$-gallon cans.

The finishing room must be clean and well-ventilated. Sprinkle floor with water to settle dust before applying enamel.

Be sure that the surface to be refinished is absolutely clean and free from dirt, grease, oil, wax, or other foreign matter.

First of all, give the car, truck, or other surface a thorough washing, and see that all corners, edgings, etc., are clean and dry. Then go over the entire surface with a soft cloth and the best grade of high-test gasoline. Use clean cloths and do a first-class piece of work. Be sure there is not any wax, sticky or greasy deposits of any kind, because a brush or spray coat will not bond or hold to such a surface.

The old finish should then be sanded smooth with No. ½ sandpaper. Care should be taken to sand out all checks. Then clean again with cloth moistened with gasoline.

Remove all remaining grit, dust, and lint with clean tack rag.

Immediately apply enamel after cleaning as dust will gather on the surface if allowed to stand.

The enamel is ready for use as it comes in the can. Apply with clean, soft brush of good quality. Flow on

the enamel and cross-brush it on one part of the surface at a time. This will prevent sagging and brush marks.

In refinishing a car in colors, it is easier to apply a dark color over a light one than it is to work the other way around. For instance, if a black or brewster green car is to be refinished in a cream or gray, an extra coat or two of the enamel will be necessary in order to cover up the dark finish. This, of course, is a physical condition and unavoidable unless the old finish is removed. Such an operation would cost more than the additional coat or two of enamel.

When using two or more colors in refinishing a car it is good practice to have a brush for each color. If only one brush is used, care must be taken to thoroughly clean it in turpentine before using to apply the second color.

Because of the opaqueness of this enamel, one coat is usually sufficient for a good finish.

If two coats are required, allow first coat to thoroughly dry—four hours under good drying conditions—sand lightly with fine sandpaper, and then proceed with second coat. BERRYLOID QUICK DRYING AUTOMOBILE ENAMEL can be applied with spray gun if so desired. It flows out perfectly. For spraying, thin about 10 per cent with QUICK DRYING ENAMEL THINNER for best results.

Amount of Berryloid Quick Drying Enamel Required to Refinish Average Automobile

For Body—One quart will cover average sedan, one coat.

For Hood and Fenders—To refinish hood, fenders, side aprons, and splash pans, one quart is required.

For Wheels—To refinish spokes, felloes, hubs, etc., one pint covers, one coat.

For Tops—Berryloid Top Dressing—Gloss seals up, makes waterproof, makes clean and like new. One pint will finish average top.

Chassis—Use Berryloid Chassis Black Enamel. One-half gallon will finish underneath fenders, running gear, and all underparts of car.

Berry Brothers Finishes for Interior Walls and Ceilings

BRUSH-APPLIED or spray-applied painted walls and ceilings are beautiful, sanitary, and economical. It is generally recognized that painted walls are a sanitary necessity in hospitals, schools, office buildings, industrial structures, etc., and it is gradually being recognized that they are equally a sanitary necessity in hotels, clubs, and, above all, in homes.

An authority states: "Laboratory experiments have proved their superiority in this respect to every other type of finish except tiling. Painted walls provide an even, smooth, moisture-resisting surface to which dust and dirt do not readily cling. They can easily be cleaned at any time with warm water and mild soap. Such walls do not offer a breeding place for germs."

Painted walls can be produced in so many ways that decorative treatments are almost unlimited. There is an individuality to such walls that cannot be secured through the use of wallpapers. In homes, through paint, walls that harmonize perfectly with the furniture are easily produced. They are restful to the eye, pleasing, and appropriate. The period walls, now so popular in home decoration, are painted walls. In public and semi-public buildings the finest results in wall finish are produced with paint.

School walls and ceilings are painted, and in most instances with careful consideration to the effect of color upon the eyesight of the students. Practically

all hospital walls, not of tile, are painted in soft, quiet, pleasing tones.

In homes, offices, stores, factories, etc., painted walls far outnumber walls finished in any other way.

In homes, a few years ago, only kitchen and bathroom walls and ceilings had a brush-applied finish, but the beautiful effects that are now being produced with brush or spray make this type of finish by far the most popular and desirable.

Berry Brothers manufactures a number of coatings for walls and ceilings, hence architects and painting contractors can find herein the material best suited to the individual operation.

Berryflat White

Berryflat White is essentially an architects' and master painters' product. It is for use on contract work where there are large areas of surface to cover and where a flat finish is desired. Berryflat White is distinctly a straight oil flat, not one with a varnish vehicle. It is pure white—free from blue. It can be tinted as required to match any delicate tone. It dries with a tough film that will not flake or peel. Berryflat White hiding and covering qualities are unequaled. It brushes out well, and is not only a perfect finish for new work but it is also a satisfactory coating for refinishing and rehabilitation work. It is so opaque that one coat of white will hide most dark colors. It will remain sufficiently wet to pick up and finish without lap for fifteen to twenty minutes. It is

especially effective, in this respect, for ceiling work. BERRYFLAT WHITE does not harden in the container. The pigment stays in suspension for months at a time without becoming hard. There is no loss of time in breaking it up on the operation. It does not skin on the job when container is left open, as it skins as slowly as does raw linseed oil. It receives the approval of leading architects and is used and endorsed by particular master painters well over America. It fills the real demand for a flat white of true beauty and lasting qualities. It produces rich-looking walls at low cost.

GENERAL—An oil paint wall finish made from tested raw material of the best quality. Produces a hard, nonporous surface that wears and washes remarkably well. One coat over sealer coat of equal parts LIONOIL CLEAR and BERRYFLAT WHITE.

COLOR—Made in White only. To be colored to light tints as desired with pure colors ground in oil.

ADAPTABILITY—Interior plaster surfaces.

SURFACE APPEARANCE—Soft, lustrous eggshell which may be stippled.

DRYING—Dust-free in two hours, hard in six to eight hours, under normal drying conditions.

COVERING CAPACITY—Five hundred square feet per gallon, single coat.

APPLICATION—Applied with brush or spray.

PACKAGE—In barrels, 5-gallon and 1-gallon cans.

The ideal first coat for BERRYFLAT WHITE is one made of one-half LIONOIL CLEAR and one-half BERRYFLAT WHITE. In most instances one coat is all that is needed over this foundation to secure the desired finish. BERRY BROTHERS LIONOIL dries hard and tough, maintains a high degree of elasticity, and will not crack or peel under the severest conditions.

NOTE: See description of LIONOIL *on page 96.*

Delitone

Delitone dries with a beautiful, delicate, soft gloss finish that is not equaled in attractiveness by any other gloss finish that can be used on large surfaces.

It is not only a beautiful finish but has superior wear-resisting qualities that are not found in other coatings.

Ink spots, pencil marks, match scratches, etc., that would disfigure other walls, are easily removed from Delitone finished surfaces by the simple process of washing and without in any way affecting the appearance. In fact, the original attractiveness of the finish can be maintained for years with only an occasional washing.

Its beauty, associated with its unequaled resistance to wear, mar, and disfigurement, makes it the ideal treatment for use on walls and ceilings of colleges, schools, office buildings, stores, public and semi-public buildings of all kinds. Its distinctive individuality has caused it to be used in thousands of structures well over the United States and Canada.

This product is furnished in paste form and is reduced by the painter to application consistency on the job. Delitone is made in White only and is to be reduced for application only with Delitone Thinner. Paste and thinner should always be ordered together. Priming or sealing coat and one finishing coat produce a tough, elastic, nonporous finish.

Delitone is tinted to the desired shades or tone with pure colors ground in oil.

It takes an excellent stipple finish and without in any way affecting the life of the coat.

DELITONE is known as distinctly a master painters' product and is generally used through architects' specifications.

COLOR—Made in White only—not blued. May be tinted with pure colors ground in oil.

ADAPTABILITY—Interior surfaces of plaster, brick, or cement.

SURFACE APPEARANCE—Semi-gloss. Takes an excellent stipple finish.

DRYING—Dust-free in four hours, hard in twenty-four hours, under normal drying conditions.

COVERING CAPACITY—Seven hundred and fifty square feet per gallon, first coat; six hundred feet per gallon, second coat.

APPLICATION—Applied with brush or spray.

PACKAGE—In barrels, 5-gallon and 1-gallon cans.

DELITONE THINNER *also comes in barrels, 5-gallon and 1-gallon containers.*

The best results from the use of DELITONE will be secured if the first coat is mixed as follows: Equal parts of DELITONE and DELITONE THINNER thoroughly mixed and strained. The second coat to be DELITONE, reduced with one and one-half pints of pure turpentine and one-half pint of DELITONE THINNER to the gallon of paste.

Berrycraft Flat Wall Finish

BERRYCRAFT FLAT WALL FINISH is a flat finish for interior decorating and is recommended for use on plaster or metal walls and ceilings, woodwork, burlap, fiberboard, canvas, papier mache, and other interior surfaces or trims. It is used in the finest of homes, office buildings, banks, schools, hotels, Y. M. C. A. and Y. W. C. A. buildings, clubs, theatres, hospitals, churches, stores—in fact, every place where good taste

requires beautiful, decorative, restful colors and a washable sanitary finish. That rich, soft, velvety wall appearance for which there is such a demand can easily be produced with Berrycraft Flat Wall Finish. It is not a calcimine but is, instead, a highest-quality, fairly heavy-bodied paint product, with high-grade varnish as the vehicle and the necessary pigments to produce that pleasing, lasting, opaque finish. It seals the pores and produces a smooth, germ-resisting surface. It is far more sanitary than wallpaper. It is made in the following 10 attractive colors and in White. A large number of other shades and tints can be produced through blending the standard colors:

Ivory	Rich Buff	Jade Green
Cream	Sky Blue	Coral Pink
Light Buff	Silver Gray	Medium Tan
	French Gray	

The practical painter will find Berrycraft Flat Wall Finish free-flowing. It brushes out smoothly and does not show laps. The painter who is inexperienced with flat wall finish can obtain excellent results by following directions.

General—A flat wall finish made with a high-grade varnish as a vehicle and the necessary pigments therein to produce an opaque finish.

Color—Made in soft, pleasing colors and in White.

Adaptability—Interior surfaces of plaster, metal, wood, burlap, etc.

Surface Appearance—Flat, with only a faint suggestion of gloss.

Drying—Slow-drying; allow thirty-six to forty-eight hours between coats.

Covering Capacity—Four hundred to six hundred square feet per gallon, single coat, depending upon material of surface to which it is applied.

Application—Brush-applied.

Package—In barrels, 5-gallon, 1-gallon, ½, ¼, or ⅛-gallon cans.

To produce the best results, when applying BERRYCRAFT FLAT WALL FINISH to new surfaces, be sure the surface is thoroughly dry and free from grease and dirt. Nail hollows and cracks must be properly filled with plaster of Paris, mixed to the consistency of putty and shellacked with BERRY BROTHERS WHITE SHELLAC. The entire surface to be finished should then receive a primer coat of one-half BERRYCRAFT FLAT WALL FINISH and one-half BERRY BROTHERS LIONOIL to produce a smooth, nonporous, protective foundation.

BERRYCRAFT FLAT WALL FINISH, though fairly heavy-bodied, brushes out easily, and thinning is not advised for either first or second coat. However, in individual cases, where thinning is necessary, only pure turpentine should be used, and then only in a small quantity.

Stir the contents of the can, and, while using, see that the pigment is kept thoroughly mixed with the liquid.

If, after standing and exposed to the air, the material should become thick and heavy, as the result of evaporation of the volatile material, it can be thinned with a small amount of turpentine to give it a body equivalent to the original consistency. Because BERRYCRAFT FLAT WALL FINISH has a varnish base, it should never be reduced with linseed or any other oil.

Do not use oil of any kind for thinning or reducing the consistency of BERRY BROTHERS FLAT WALL FINISH. Best results will be secured by applying the finish as it comes in the original package. If in individual instances thinning is required, then use not more than a pint of turpentine to the gallon.

A flat brush of the best quality, four, four and a half, or even five inches wide, is the best type with which to apply Berrycraft Flat Wall Finish.

Berrycraft Interior Finish

(Gloss)

This high-gloss product is for finishing plaster, wallboard, woodwork and furniture. It is especially applicable to the finishing of walls, ceilings, and trim in bathrooms and kitchens where an easy-to-wash, decorative gloss finish is desired.

Berrycraft Interior Finish—Gloss is opaque and does not require a foundational coat or undercoat. Two coats will usually be found sufficient to cover most surfaces.

It is widely used in tearooms, shops, and stores, as well as in residences; in fact, in any place where the amount of surface to be covered does not warrant the use of one of the distinctly master painters' products.

It is widely used as a household touch-up and repair coating for finishing or refinishing furniture, toys, etc.

Berrycraft Interior Finish—Gloss is ready-mixed. All that is necessary is to stir it thoroughly and brush on. If it is necessary to thin, then use a very small quantity of pure turpentine. Never use oil of any kind for thinning.

It spreads easily, covers well, and dries hard. It covers 400 to 500 feet per gallon. One or more colors can be mixed to secure the desired color, shade, or tint.

Berrycraft Interior Finish—Gloss comes in White and the following colors:

Light Ivory	Light Green
Pale Blue	Cream
Tan	Silvery Gray
Pearl Gray	Jade Green

It is packed in 1-gallon, ½, ¼, or ⅛-gallon cans.

Berry Brothers Mill White

(Gloss, Eggshell, or Flat)

BERRY BROTHERS MILL WHITE is a smooth, light-diffusing, washable, elastic finish of reasonable cost for interior surfaces of brick, concrete, plaster, and wood. It is made from a special formula, by an exclusive process, and should not be confused with ordinary paint. Because it dries with a smooth, hard, compact film, to which dust particles do not readily cling, surfaces covered with BERRY BROTHERS MILL WHITE remain clean much longer than do those covered with paint. The treatment of the oils used in its compounding and the selection of pigments cause it to remain white except in those places where surfaces are shut off from light. Since it does not chip or crack, a renewal coat may be applied over the old.

BERRY BROTHERS MILL WHITE was formulated for use in factories, power plants, and industrial structures, wherein illumination, and radiation of light, is an important consideration. It is well known that most natural-colored walls, and walls painted in dark shades or colors, absorb a great amount of the light that falls thereon. It is equally well known that a slightly gloss-white surface will reflect or diffuse far more light than any other. It is not uncommon for an industrial plant to increase its output as much as

twenty per cent, without increasing space or number of employees, by merely finishing the walls with white.

Berry Brothers Mill White is greatly superior to cold-water paint for finishing walls and ceilings of industrial buildings. Cold-water paint produces a somewhat rough, uneven, porous surface to which dust and dirt easily cling. Mill White produces a tough, smooth, lasting, nonporous finish to which dust does not readily cling, one that can be washed and kept clean. Then, too, the dust-covered, cold-water painted wall loses its light-reflecting power and has but little more value than an uncoated surface. Mill White walls are also long-lived, last for years without refinishing, and are far less expensive in the long run.

The Gloss finish in Berry Brothers Mill White is the best for industrial purposes. The Eggshell and Flat finishes are for use where workrooms are small in size and a slightly lower reflection is desired.

Color—A pure, radiant White.

Adaptability—Especially adapted to industrial buildings where light-reflecting walls and ceilings are required. Increases visibility, efficiency, and cleanliness. May be used economically in other classes of buildings for similar purposes.

Surface Appearance—Gloss, Eggshell, or Flat.

Drying—Dust-free in four hours, hard in twenty-four hours, under proper drying conditions.

Covering Capacity—Six hundred square feet of wood surface and approximately four hundred square feet of brick, plaster, or concrete surface per gallon, single coat.

Application—Brush or spray-applied.

Package—In barrels, 5-gallon, 1-gallon, or ¼-gallon cans.

MILL WHITE is also used in school corridors, and in other places where abundance of light is necessary.

On all new or unpainted work, BERRY BROTHERS MILL WHITE requires a primer coat, a foundation coat, or both, depending upon the surface material, and the condition of that material, to be finished.

New wood surfaces require a primer coat of LIONOIL CLEAR. The LIONOIL coat should be given twelve hours to dry under normal conditions. Then two coats of BERRY BROTHERS MILL WHITE should be applied, with twenty-four hours between coats, under proper drying conditions.

On cement, brick, stone, or other masonry surfaces that have not previously been painted, the primer coat should be a coat of LIONOIL CLEAR, with twelve hours to dry under normal conditions. Over this foundation apply two coats of BERRY BROTHERS MILL WHITE, which should each be given twenty-four hours to dry between coats.

Where BERRY BROTHERS MILL WHITE is to be applied to surfaces that have been coated with cold-water paints of any kind, or where hot-water calcimine has been used, the old coatings must be washed off, a new, clean surface established, and allowed to become thoroughly dry before the new coats are applied. Workmen should be instructed to use as little water as possible so that the moisture does not penetrate the wood, brick, cement, or other material to any great depth.

If the old coats are MILL WHITE, they should be thoroughly dusted or washed before new coat is applied. If oil paint has been used and shows signs of cracking

or peeling, it should be wire-brushed and the surface conditioned in the same manner as an exterior surface would be treated for repainting. If in bad shape, it should be torched off and refinished in keeping with specifications for new work.

General Notes on Finishing Walls and Ceilings

Newly plastered walls, regardless of the brush or spray finish to be applied, should be treated for free lime, which if allowed to remain without treatment will "burn," mar and damage the finish. All such walls and ceilings should be given a thorough brushing with a solution which contains two pounds of zinc sulphate crystals to the gallon of water. After walls are dry, all loose crystals should be removed with duster brush. If the wall has stood unfinished for several months and is perfectly dry, the solution treatment may be omitted. Green walls, that is, walls that are only a few days old, should never be painted or finished. There are too many chances of peeling or blistering. Plaster of Paris, or crack filler, should be used to fill all cracks, nail holes, etc., while all rough spots and uneven surfaces should be sandpapered. Walls and ceilings should be clean and dust-free. The duster brush is as important a tool on this kind of work as it is on fine wood finishing.

If the walls have been previously painted and are in good condition, all that is needed is a thorough dusting. If some of the paint is loose, cracked, or crazed, the surface will require a thorough wire-brushing. If in very poor condition, peeling, blistered, etc., then the old finish should be removed. If there are pronounced "burns" in the old coat, the paint should be removed from these spots and the area coated with aluminum paint mixed in oil. The touched-up spots should be thoroughly dry before the new coats are applied.

Grease should be washed off with a solution of ammonia and water, or one of sal soda and water, and allowed to dry. Old calcimine, or other water-mixed coatings, should be thoroughly washed off. Filling cracks, sanding, and other directions for preparing new surfaces apply as well to old.

There are some experienced painters who have successfully applied oil base or varnish base wall finishes directly to wallpapered walls. This can be done if the paper is firmly attached to walls or ceilings over the entire surface. It is better practice, however, to remove the paper, properly condition the surface, and apply the new finish, without any intermediate material between plaster and finish, in the same way as for new work. A more sanitary job is certain to result, and in most cases a far-better-appearing one. Then, too, it will have longer life.

Never use gloss oil or glue size for the first or primer coat where the finish is to be of an oil or varnish base coating. Gloss oil and glue size may have answered the purpose in a way with water-mixed coatings, but they do not belong as undercoatings for permanent finishes. When so used one may expect only trouble, and in most instances complete failure will result.

The purpose of the primer is to seal all pores, stop suction, and provide a foundation that will result in the finishing coats being smooth, even, and uniform in shade or tint. If the primer coat is omitted, at least one more coat of the finish material is required, and often two extra coats are needed to produce a good job. Then, too, the first prime coat must possess a natural resistance to free lime, alkali, and other elements that are present in plaster, brick, cement, etc. Each BERRY BROTHERS product listed has a first coater that possesses all the qualifications and will produce the best results when used in keeping with specifications.

After the primer coat is dry, the wall-finishing material should be applied as it comes in the original container—that is, while the product may require tinting or coloring, it should not have added thereto any oil or pigment not covered in the specifications. There is a decided difference in the formulas used to produce the wall finishes listed herewith, and an equally decided difference between any one of them and brush-applied or spray-applied coatings for other purposes. Any one of these coatings can be applied over any other when thoroughly dry, but this does not mean that they can be mixed with each other, or with other materials, when in liquid form or when wet.

Linseed oil, for instance, should not be used to thin or increase the bulk of any of these wall finishes. LIONOIL can be used as specified in connection with BERRYFLAT, but not with DELITONE.

Oil of any kind should not be added to Berrycraft Flat Wall Finish, for it is a varnish product, and oil added thereto will result in work that will necessitate refinishing. The painter will have satisfactory results if he follows the architect's instructions: "Follow the manufacturer's directions as they are on the original packages."

Methods of stippling, scumbling, sponging, blending, etc., are not covered in this book. Some of these are here to stay; they are a part of reproducing Old English, Italian, Spanish, Colonial, and other period finishes. These are beautiful and attractive, though some of the other wall treatments are only fads of the hour. Berryflat White, Delitone, and Berrycraft Flat Wall Finish can all be used, and have been used thousands of times, for producing these special treatments.

There are several decided advantages in using these brush-applied coatings in the production of embossed or rough surface treatment of walls and ceilings. One of the first considerations of the architect in detailing such treatment, or of the master painter in producing it, is that almost every possible type of decoration, except the high-art type in churches, theatres, hotels, etc., where frescoes, murals, and other elaborate forms of art are used, becomes monotonous in time and owners of structures thus treated demand change. New color is wanted, new treatments are demanded. This is especially true in home decoration, in small stores, shops, schools, etc. Where walls are rough-plastered, or where the relief of any kind is a part of the plaster, and change is required, it can only be accomplished in a very limited way except at great expense. English hand-patted walls, for instance, must remain hand-patted or be replastered. Sanded walls must remain sanded.

When the walls are smooth-plastered and with a putty coat, practically any desired finish can be produced with one of Berry Brothers protective and decorative coatings. Then, when change is required, the coatings can easily be removed, and an entire new finish applied to bare walls or ceilings. Practically every house comes up for resale, or rental, during its structural life; practically every business place is resold, released, or rented. The dollars-and-cents side of depending upon brush-applied coatings to produce period effects is obvious.

Berrycraft 100 Per Cent Pure House Paint

EXTERIOR paint for frame buildings is generally recognized as a common necessity. Practically everybody realizes that wood, if it is to last when exposed to weather, must be treated with a protective coating. The best-known and most widely used protective coating for frame structures is house paint.

The word paint in itself means little. A pigment of any kind, mixed with a liquid to a consistency that will allow it to be applied to a surface with a brush, can be called paint. The quality of a paint depends upon the material used and upon the knowledge and integrity of the maker.

One of the characteristics of a good grade of house paint is that it is both decorative and protective. Paint is decorative because when dry it leaves a continuous, uniform, opaque coating on the surface to which it is applied and the coating can be practically any desired color. Paint is protective because it forms, when dry, a continuous coating that air, light, and water do not penetrate. It is evident that when the decorative value is gone, when the paint chalks, cracks, peels, checks, scales, or completely disintegrates, the protective value is also gone. It is not difficult to make a paint that is decorative only—almost anyone can do that. It is very difficult, however, to make a paint that is highly decorative and genuinely protective, for to do so requires a thorough knowledge of the chemical and physi-

cal actions of the materials which enter into the making of highest-quality house paint.

After making the highest-grade varnishes, enamels, and paint specialties for over seventy years, Berry Brothers introduced Berrycraft House Paints. When this house paint is recommended to architects, builders, painting contractors, and painters, then the reputation of all other Berry Brothers brush-applied and spray-applied, decorative, protective, and preservative coatings is at stake, because the reputation of any one product is interrelated with that of every other product. Reputation is always based on quality, and so the quality of Berrycraft House Paint must equal the always satisfactory quality that millions have found in Liquid Granite Floor Varnish, Luxeberry Wood Finish, Luxeberry Enamel, and all the other architectural finishes that bear the name of Berry Brothers.

Berrycraft House Paint is distinctly Berry Brothers in quality. It is made from pure white lead, pure zinc, pure linseed oil, and Lionoil. Pure, as used here, means materials that conform to the highest commercial standards. Lead and zinc are used in the proportions that long years of paint research work and thousands of exacting practical tests have firmly established as giving the best results.

Lead particles are so fine that they lie one over the other in a compact mass even when brushed out in a thin paint coat. Lead, however, has a tendency to dust or chalk. Zinc dries hard and tough. When white lead

and zinc are brought together in the proper proportions, perfect pigment is the result and one that produces a hard, firm, but elastic, opaque, long-life paint that neither dusts, cracks, nor peels. That is, it is long-lived if it has the right vehicle, for, when the oil film breaks, the life of any paint is gone. Linseed oil is the best paint oil known to man. It is approved by every recognized authority on paint-making. That is why pure linseed oil is used in BERRYCRAFT HOUSE PAINT.

Linseed oil forms a very thin, continuous, impenetrable film and one that possesses weather-resisting qualities. Linseed oil films, however, have a tendency to break up—that is, they oxidize in time, and when that occurs the protective and preservative value of the paint coat is gone. House paint needs a life-extending medium, and in BERRYCRAFT HOUSE PAINT that medium is LIONOIL.

LIONOIL, exclusively a BERRY BROTHERS product, not only improves the action of the linseed oil and stops the tendency to break up, it not only acts as a paint-drying agent and a film-hardener, but it also adds greatly to the elasticity of the paint coats. It increases the density of the coats and also impenetrability. BERRYCRAFT HOUSE PAINT, because of LIONOIL, possesses greater resistance than other paints to destructive climatic conditions; it protects both the paint of which it is a part and the surface to which the paint is applied against rain, snow, heat, cold, air, wind, dust, and dirt. It makes good paint better.

BERRYCRAFT HOUSE PAINT comes in the following 24 pleasingly attractive colors:

Ivory	Robin's-Egg Blue
Colonial Yellow	Pea Green
Cream	Meadow Green
Straw	Lawn Green
Chrome Yellow	Dark Green
Tan	Terra Cotta
Pearl Gray	Walnut Brown
Light Slate	Berry Brown
Slate	Neon Red
French Gray	Indian Red
Gray Stone	Maroon
Dark Blue	Bungalow Brown

Also made in Outside White, Inside White (Flat), and Jet Black.

BERRYCRAFT GUARANTEE: This paint is packed full measure and is guaranteed to be strictly in accordance with the formula printed on the can.

General—Highest-quality house paint made from lead, zinc, linseed oil, Lion-oil, and drier.

Colors—Made in 24 colors, Outside White, Inside White, Jet Black.

Adaptability—For exterior use on wood and metal.

Surface Appearance—Slight gloss. Such a gloss is a necessary characteristic of the protective qualities.

Covering Capacity—400 to 500 square feet to gallon, first coat, new work; 500 to 600 square feet to gallon, second coat.

Application—Applied with brush or spray, though brush is preferred in exterior house painting.

Package—In barrels, ½ barrels, 5-gallon, 1-gallon, ½, ¼, or ⅛-gallon cans.

Defects in Painted Surfaces

Peeling—Is the imperfect attachment of a paint film as a result of applying the paint to a damp, greasy, or resinous surface. Peeling is often caused by the push-

ing of the coat from the surface by the pressure of moisture that is being driven from within the wood by the action of the sun's rays, by artificial heat from within the building, or by the action of moisture rising within the wood through capillary attraction that results from the wood's contact with a source of moisture.

SCALING AND FLAKING—Is the detachment of paint from the surface in small scales or large flakes. A brittle paint will scale or flake from the same causes that a more elastic paint will peel. All scaling or flaking is not caused by moisture from within the wood or other body carrying the paint. Many such failures are the result of poor-grade paint, too rapid drying out, lack of tooth, that is, penetration into the base, faulty priming coat, exhaustion of the oil, too heavy coats, etc.

BLISTERING—This is due to moisture in the wood to which paint is applied. The moisture must eventually come out and it cannot do otherwise than damage the paint coat. Blistering is from the same cause as peeling; the effect is different in formation. It results from applying paint to a surface that, while it may appear to be dry, still contains moisture.

ALLIGATORING—This is akin to peeling. The paint cracks into large segments resembling the back of an alligator. The edge of a segment, or the end, loosens and curls back; the center, or the other end, continues to hold to the surface. Too heavy coats of paint, especially if inelastic, applied to unseasoned wood will alligator. Paint, when applied to a surface that already contains a large number of paint coats, is apt to alligator.

CRAZING—Small interlacing cracks on surface. Crazing results from the paint coat not expanding and contracting with the surface to which it is applied, lack of elasticity of the paint or of the undercoat, and applying in too cold weather. Other causes are the same as those of alligatoring.

Selection and Application of House Paint

The first requirement for exterior painting is exactly the same as that for finishing any kind of surface with a brush-applied, spray-applied, or dipped coating—highest-quality material made for the purpose. The best workmanship cannot overcome the defects caused by poor material.

The second requirement is good workmanship, because good workmen are always careful about every detail that enters into the production of good work. Poor workmanship, slighting of this part and that part of the work, will produce only indifferent results even when the best material is used.

The first consideration when painting the exterior of any structure, or any part thereof, is that the surface be both clean and dry.

Paint should never be applied to any surface when it is raining or snowing, nor should it be immediately applied after a rain. All moisture must first be out of the walls. North walls, and those that are shadowed by other buildings so that the direct rays of the sun never reach them, take longer to dry than do walls with long exposure to sunlight. It is just such walls, while dry on the surface, yet still contain moisture, that cause most of the trouble. Remember that in instances of this kind it is not the paint which fails, and also that trapped moisture will injure a high-grade paint coat in the same way that it will one of low-grade paint.

Remember water will penetrate a surface that was once painted, where the oil has dried out of the coat, and where it offers but little more protection than no coat at all. In cases of this kind the moisture is apt to be trapped in spots if paint is applied before the receiving material is dry throughout.

Experienced painters realize that exterior painting should be done only when it is above 40° and when there is every assurance that the air will stay above that temperature. In other words, the temperature may be at 50° or even 60° during the daytime, but if it is apt to drop below 40° during the night, or before the paint is hard-dry, then it is no time to paint. Moisture in the air affects the surface, cold affects the oils, and therefore the wearing qualities of the paint. There isn't anything for building owner or painter to gain by trying to force paint to do something that is directly opposite to the laws of nature.

The surface of all new work must be thoroughly clean before paint is applied. The duster brush and scraper are as important tools in exterior painting as they are in interior finishing. The surface should be gone over with duster and scraper and all dirt, plaster, etc., removed. If there are grease spots, it pays to wash them off with turpentine or solvent naphtha.

It also pays to wash off in the same way all knots and other gummy spots where the gum is heavy and sticky. All knots should receive a coat of shellac or aluminum knot primer; otherwise, pitch will spoil the paint coat. A few minutes' extra work, a little extra care, in getting the surface in good condition will add

greatly to the appearance of the finished job and save time in applying the first paint coat.

On old work, if the paint is loose or cracked, remove with wire brush or burn with a torch. The experienced painter knows that using the torch is the best way to remove old paint because it makes it possible to get down to a clean, smooth surface upon which to build new, evenly distributed, protective coats of paint. He knows that such a job will more than pay for itself in the additional length of life of the paint. The difficulty is in convincing building owner of the advantages.

In many instances a building has been allowed to go so long without repainting that on a large part of the surface the paint is little more than dust or chalk and can be removed easily with a wire brush. Paint on other parts of the surface, due to nature of wood, is still fairly firm and hard. The experienced painter who wants to produce a first-class job will torch off the hard spots, brush off the balance, and thus have uniformity of penetration over the entire surface.

It is evident that on a bare-wood surface the paint strikes into the wood and secures a good tooth or bond. However, when it comes to repainting, there is only a slight penetration into the old paint coats and not into the wood. It is natural that, when the time arrives for the second repainting, the life in the first coats is about gone; it is hard, dry, and nonelastic through age. It no longer expands and contracts with the expansion and contraction of the wood. Here is where cracking sets in.

The second repainting, because high-grade paint has always been used on the structure, may set without any

trouble. When it comes time for the third repainting the cracking has often become crazing. The surface is perfectly smooth and firm but filled with cracks that cross and recross. The thickness of the coats that have been brushed one on top of another is evidence that it is time to get down to the bare surface and begin over. The new coats, as they set, produce a tension on the old coats, and, as the life is gone out of the first five coats, something must give. The cracking or crazing turns to peeling or alligatoring under the pull, and there is then no remedy other than torch off all coats and start over. That is why it pays the building owner to have the old coats removed as soon as there are signs of crazing. It also pays the painter to call his attention to what can be expected, for the owner, in most instances, insists upon holding the painter responsible.

It is good practice never to apply paint to a glossy surface. Always sand with No. 1 paper so as to provide a surface that will give the paint coat a good bond. When it comes to repainting, and the old paint surface is glossy, because good paint was originally used, it pays to break the gloss by giving the old paint a slight roughing with No. 1 paper. When this is done it directly contributes to the life of the paint coat as it increases penetration, tooth, and bond.

New galvanized iron should be allowed to stand exposed to the weather for six months before it is painted. When it is not possible or practical to do so, the surface should be treated as follows: Wash with 5% solution of acetic acid, then rinse clean with pure water, and allow to thoroughly dry before painting.

Do not paint a new frame building until the plaster on the inside is thoroughly dry. The sun will draw the moisture through the wood, or artificial heat from the interior will force it to the outer surface, and thus cause the paint coats to blister or peel.

Berrycraft House Paint, as it comes in the can, is sufficiently heavy for any use. The condition of the surface and the character of wood have much to do with the result that will be secured. The best results come from the time, thought, care, and judgment that are placed back of the use of this highest-quality house paint.

For the first or primer coat to be applied to a new wood surface, thin with pure raw linseed oil; one-half gallon of oil to a gallon of paint. To act as a true preservative, and to form an adequate foundation for succeeding coats, the first coat should be allowed to thoroughly dry and in a natural manner. Turpentine or other volatile liquid, or driers of any kind, should never be added to the primer coat. See can for directions.

Do not add oil of any kind to Berrycraft House Paint which is to be used for the second coat. It reduces the opacity of the coat, its uniformity of color value, retards its drying, and does not increase its protective value in any way if oil is used therein. Adding oil often makes it necessary to apply three coats to a surface that would otherwise only require the standard two coats. Because three thin coats of paint makes a far more lasting job than does two heavy coats, and also to increase the even distribution of the coat, it is good practice to add pure spirits of turpentine to the second coat. Do not use more than one pint to each gallon of paint, and in most instances one-half pint will prove to be sufficient.

For the third coat on new work and the second coat on repainting, use Berrycraft House Paint as it comes from the can and brush out to a smooth, full-covering coat. Remember that there must be full-color value in the third or last coat if it is to decorate, and a close, hard, though elastic, film if it is to protect.

For repainting old wooden structures the amount of thinner to be used in the first coat depends on the condition of the surface. If in fair condition, add two pints of good raw linseed oil and one-

half pint of pure turpentine to each gallon of BERRYCRAFT HOUSE PAINT. If the old coat is in extra good condition, hard, free from dust or chalk, cracks, etc., use less oil.

When the old coats have been torched off, the method of finishing should be the same as for new work.

When repainting an old house that has been neglected until the surface is porous, aluminum paint is recommended as a seal coat. Mix BERRY BROTHERS ALUMINUM POWDER with BERRY BROTHERS ALUMINUM PAINT LIQUID No. 3, using 1¼ to 2 pounds of ALUMINUM POWDER per gallon.

On new work, where the wood is sappy or spongy, ALUMINUM PAINT seals it over like a sheet of metal, keeps back the pitch or sap, and makes a first-class surface as well as protecting the succeeding coats.

All nail holes, small cracks, etc., should be filled with a good grade of putty before the second coat of paint is applied.

BERRYCRAFT HOUSE PAINT should be thoroughly mixed before it is applied. Do not open can or pail before time of application and do not mix more paint at a time than is needed for immediate use. When thinning paint, in keeping with directions, never thin more paint than is required for the coat—that is, do not have paint thinned with oil left over from the first coat and then use it as part of the material for the second coat, or paint prepared for second coat and use it for the third coat.

In mixing BERRYCRAFT HOUSE PAINT be sure to have a clean, flat, smooth wooden paddle with which to thoroughly stir the paint. It is good practice to have a clean empty pail of the same content as the BERRYCRAFT HOUSE PAINT container. Pigment in mixed paint being heavy, it will always settle to the bottom of the container, forming a thick paste or mass. This pigment must be brought back to complete suspension and distribution within the oil vehicle. The best way is to pour off the liquid from the paint into the clean can, then with the paddle loosen the settled pigment. After it has been loosened and stirred, pour back a little of the liquid at a time and stir well into the pigment. Each portion of the liquid must be mixed with the pigment before more is added. Keep stirring until the paint has a uniform color and until all the pigment is in suspension, then pour back and forth from one pail to another several times.

The experienced painter always has a piece of clean wire window screen of fine mesh, or a double piece of cheesecloth, through which to strain each pail of paint after it is mixed.

Berrycraft House Paint is not only formulated so that it contains material that makes it the highest-quality exterior paint but it has the advantage in method of production and mixing that can only be secured in a large plant where there is special machinery for the purpose. Every drop of oil, every ounce of pigment, used in Berrycraft Mixed House Paint is thoroughly tested by graduate chemical engineers and its purity, quality, and general fitness assured. The painter who buys material and mixes his own paint hasn't any such assurance of quality. Then, too, mixing large quantities in powerful machines has every advantage over hand-mixing. The experts at the machines see to it that every particle of pigment receives a thorough lubrication of oil, and that the color pigment is completely distributed throughout the paint pigment. The pigments do not separate one from the other when in the container, and the thorough lubrication which tends to a smooth, even surface when dry does not leave any of the particles. The mix is complete, thorough, and effective.

Then, too, in Berrycraft House Paint there is Lionoil, and this makes the paint the ideal material for specification by the architect who believes in giving the building owner a satisfactory exterior finish, and used by the painter who believes in giving the owner the best results it is possible to produce.

Berry Brothers Lionoil

LIONOIL is a clear amber-like liquid made from a combination of oils. The formula from which LIONOIL is made was developed over twenty years ago in the laboratory of BERRY BROTHERS and is known only to a limited number of the production organization. LIONOIL has always been distinctly a BERRY BROTHERS product and will always remain one. The trade name is registered. There is no other product like it on the market or one that will render the same service in any one of the many and varied uses.

LIONOIL is very elastic, dries with a practically impenetrable film, and retains its luster under severe service conditions. It was first used as a rust-preventive coating in both North America and abroad. Then, because of its great resistance to alkaline conditions, it was discovered to be an effective sealer, or first coat, on cement, concrete, brick, and other masonry surfaces. Later, through a necessity created by protective-coating problems, it was found that LIONOIL, rightly proportioned, formed a highly efficient paint oil, especially where exposure to the elements was greatest. It is used as a vehicle in a number of BERRY BROTHERS special coatings, and some of them have the word LIONOIL as part of the name as a means of identification. It can be applied with brush, spray or through dipping. Its range of use is so great that it can only be partly catalogued.

LIONOIL *comes in the following size containers: Barrels, ½ barrels, 5-gallon, 1-gallon, ½, ¼, or ⅛.*

Use of Lionoil in Architectural Work

As Wall Sizing

On new plastered walls and ceilings, Lionoil is especially effective as a sealer or first coat. Many master painters apply Lionoil Clear as it eliminates suction spots, hot spots, hairline cracks, etc. For walls sealed with Lionoil, with Berryflat White, Berrycraft Flat Wall Finish, and similar products, it is good painting practice to mix one gallon of Lionoil and one gallon of the flat finish for the sealer or first coat.

On old walls, for hot spots, saltpeter, etc., use Lionoil, reduced with about ten per cent of naphtha or turpentine, for spotting in. When thoroughly dry, apply a coat of Berryflat White or Berrycraft Flat Wall Finish, which is mixed with seventy-five per cent of the flat finish and twenty-five per cent Lionoil.

For making a washable mix for finishing kitchens, bathrooms, etc., add one quart of Lionoil to each gallon of Berryflat, or other flat wall finish.

For damp spots on basement walls, use Lionoil Clear as it comes from the container and without reducing as first or sealer coat.

For Cement Floors

All new cement floors require a foundational or protecting first coat for the finishing material and that first coat should always be Lionoil. It seals tight, makes the floor dust-free, and protects the floor from the disintegrating effect of moisture. If a decorative type of finishing coat is desired, Lionoil should always be

used as a first coat, not only for the purpose of forming a smooth, continuous coating as a base but also to protect the other coats from the alkaline action of the cement.

For new cement floors, use first a wash coat of Sulphate of Zinc on a basis of three and a half pounds to a gallon of warm water. Allow this coat and the floor to become thoroughly dry and then seal with a heavy coat of LIONOIL Clear without reducer of any kind. If a decorative finish is desired, the finishing coats should be BERRYCRAFT LIONOIL FLOOR ENAMEL. If the floor is in a machine shop, factory, etc., where a decorative finish is not required, use two coats of LIONOIL Clear.

It is very important that cement floors be thoroughly cleaned of all dirt, grease, etc., and that they be thoroughly dusted before any coating is applied.

Paint Vehicle

The painter who mixes his own material for exterior house painting will find that he can make a far better coating if he uses LIONOIL Clear. It adds to the elasticity of the coat, increases resistance to salt air, fog, rain, sunshine, and cold to an unusual degree. It has been used for this purpose for over twenty years and has always given satisfactory results.

Use one gallon of LIONOIL to five gallons of linseed oil—raw oil preferred. Do not add drier, because it is not required; LIONOIL is a natural drier. LIONOIL prolongs the life of the paint and improves the luster.

For outside sash, screens, shutters, and trim, use LIONOIL Clear as the oil in any mix, whether in paste or dry.

For porch floors, decks, steps, etc., use on the basis of two gallons of Lionoil to three gallons of raw linseed oil, or add it straight to a lead mix.

For Interior Work

Lionoil is specified by a large number of architects as a back coating to protect wood trim of any kind that comes in contact with plaster. Such specifications usually read: "The unexposed back of all standing interior woodwork coming in contact with plaster shall be given two coats of Lionoil Clear." The trim is, of course, coated and allowed to thoroughly dry before it is set. The purpose of such coats is to protect the trim from moisture which may be within the plaster, to prevent burning and staining, and also to prevent checking, warping, or swelling.

Lionoil is also specified as the coating for inside of drawers and for shelving.

It is also used for the top and bottom of wood doors after they have been fitted and hung.

Lionoil is extensively specified by architects and widely used by master painters as the first coat for new enamel work. It is often used clear, but in most instances it is mixed one-half Lionoil to one-half enamel undercoat, flat wall finish, or other foundational coat.

For succeeding undercoats, where Berryflat White is used, add one pint of Lionoil to each gallon of flat.

For inside windowsills, use Lionoil instead of shellac as the first coat. It is water-resisting, protects the succeeding varnish coats, and can be sanded in from fourteen to sixteen hours.

LIONOIL is a very satisfactory first coat for wood floors. It can be applied over stain, and, as it is clear and transparent, it does not discolor the floors. It can be sanded in from fourteen to sixteen hours.

As a vehicle for bronzing liquid, and for radiator finish of any kind, use LIONOIL as the only oil and as it comes from the can. It will be found superior to any other oil that can be used for the same purpose.

It offers greater resistance to weather conditions than any other vehicle that can be used in mixing aluminum paint for exposed storage tanks, etc. It is approved by the largest makers of aluminum paint in powder form.

Lionoil for Floors

Heavy-duty, school and factory floors, and other floors subjected to equally hard wear, are often treated with oil. LIONOIL is superior to linseed oil for the purpose as it produces a hard-drying, wear-resisting surface, one that does not hold dust or dirt, and preserves the natural color of wood or cement.

It can be used on cement floors where other oils have a tendency to be broken up from the alkaline action of the cement.

For Metal Surfaces

For coating interior and exterior metalwork, LIONOIL is superior to any other oil. It is used clear as a first coater and as the oil for the succeeding decorative coats.

In paints for architectural metalwork, LIONOIL should be used straight without any additional oil. Such paint mixes can be thinned with turpentine or naphtha, but do not require a drier of any kind.

Lionoil, because of its resistance to moisture and to all weather conditions, and because it forms a continuous, impenetrable coating that is waterproof, is the one dependable rust-preventive.

For steel structural work, for steel sash, shutters, fire escapes, stairs, railings, fences, ornamental work of all kinds, etc., it forms the longest-lasting, wear-resisting mix regardless of the pigment used.

Aluminum Paint Vehicle

Lionoil is widely used in mixing aluminum paints for wood, metal, and other surfaces. It offers greater resistance to weather exposure than other oils, adds greatly to the life of the coat, and forms a very elastic coat—one that is always desirable on large surfaces which have a tendency to expand and contract.

The largest makers of aluminum in powder form for paint making recommend Lionoil as the vehicle.

For Brick, Cement, Stone, and Other Masonry Surfaces

Lionoil, because of its great resistance to moisture and to alkaline deposits, is a perfect first coater for both interior and exterior masonry walls of any kind. The best practice is to use Lionoil Clear as a first coat, and to use Lionoil as a vehicle in most forms of succeeding decorative or protective coats.

It is appreciated, of course, that Lionoil should not be applied to the surface of any material which contains moisture. The rule that the bulk of a material, as well as the surface thereof, must be thoroughly dry before a brush or spray coating is applied holds with Lionoil to the same extent as it does with any coating.

LIONOIL will keep moisture out of any surface to which it is applied, but it cannot trap and hold moisture within that surface. This means that, when it is used on inner walls, it cannot protect the walls from moisture which penetrates from the outside. Such a condition can only be corrected by treating the outer walls. There isn't a brush coating of any form that will withstand water or moisture back of the coat.

LIONOIL is especially applicable as a first coat to all exterior walls above grade of brick, stone, concrete, or stucco. It seals the pores, stops moisture penetration, makes a smooth and firm foundation for the succeeding coats, and protects such coats against the alkaline action from the construction material.

It is also an excellent vehicle for the succeeding decorative coats as it adds greatly to their protective value.

It is good practice to wait until the binding plaster on any masonry structure is thoroughly dry before applying a brush coat. Cement and stucco should not be painted immediately after they have set, but should be given additional time to become thoroughly dry. LIONOIL makes an excellent foundational coat on structures of common brick where succeeding paint coats are necessary to carry out the architect's color plan. It will be found to produce a more lasting and pleasing finish than where the decorative paint is applied directly to the brick.

Painters: Write to BERRY BROTHERS for a copy of "Shop Uses for Lionoil," a small direction card to hang on the wall of the shop.

Use of Lionoil in Factory Production

Lionoil has been in constant use as a production material for over twenty years and is used in so many distinct and different ways that only a few can be outlined or suggested.

Lionoil is used on metal because it is widely recognized as a positive rust-preventive, because it can be used for that purpose without the necessity of removing for applying other coats of finishing material, and also because it is not necessary to remove from parts that require tooling or machining in succeeding production operations.

It can be brushed, sprayed, or dipped. It can be used clear, or used as a vehicle for mixing shop or field coats.

It stops rust, pitting, or corrosion of metal parts that have to be shipped, or stored for quite a length of time between production operations.

It is used by ninety-five per cent of the aircraft industry as a rust-preventive on steel tubes, framework, ribs, spars, and other metal parts. It is used also on wooden parts and sections of planes.

The world's largest makers of speed boats, canoes, yachts, etc., use Lionoil as a wood-sealer, wood-preservative, and a rust-preventive.

It is used on very small objects and on very large. It forms an unequaled foundation for paint, varnish, and lacquer finish.

One of the first manufacturers to use Lionoil was a pioneer in the production of steel automobile bodies. The bodies were stamped, coated with Lionoil, and

shipped several hundred miles to the automobile plant where they were finished. Previous to the use of LIONOIL, the bodies had to be greased and then, before finishing, the grease had to be washed off. LIONOIL proved to be a perfect rust-preventive and finishing coats could be applied directly over it.

Since that day, LIONOIL has come into general use in hundreds of manufacturing plants, and for practically a different use in each plant. Any manufacturer needing a rust-preventive coating, or a coating which acts as a protection against moisture, will do well to investigate LIONOIL.

What LIONOIL will do, how it will act, and how it will serve are not matters of theory. It has been used for every purpose for which it is recommended—not in one or two instances but thousands of times. It has been subjected to every test in everyday use, and many of these actual-service tests are of very long duration. It is an unusual product with an unusual record of sustained successes.

Berrycraft Lionoil Floor Enamel Dries Quickly

(Gloss)

BERRYCRAFT LIONOIL FLOOR ENAMEL is made for use on soft and hard wood floors, stairways, cement floors, steps, etc., on wood or cement porches, porch

decks, boat decks, etc. This enamel has the opaque covering property of high-grade floor paint, and, in addition, the depth of tone and glossy appearance that belong distinctly to an enamel. It brushes on easily, dries hard and free from tackiness. It produces a finish which is not only exceedingly attractive but one which is exceedingly tough, wear-resisting, elastic, and lasting. The wear-resisting feature makes it especially useful for all types of floors where both a protective and decorative coating is desired.

Berrycraft Lionoil Floor Enamel hardens throughout the coat and therefore offers great resistance to the penetration of dirt. Floors finished with this product are a great deal easier to keep clean and sanitary than those finished with ordinary paint. Surfaces thus treated can be wiped with mop and water with but little effort on the part of the worker.

Because of its hard, continuous tile-like surface, its resistance to moisture and wear, and the ease with which it is kept thoroughly clean and dust-free, it is recommended for use on floors in schools, hospitals, offices, factories, institutions of all kinds, stores, engine rooms, power plants, and other floors that must be kept in a perfectly sanitary condition.

Berrycraft Lionoil Floor Enamel comes in 9 attractive colors, Black and White:

Dust
Dark Oak
Pearl Gray
Mahogany Red
Slate Blue
Gray
Walnut Brown
Slate
Green

SURFACE APPEARANCE—Gloss. Should not be rubbed.

DRYING—Dust-free in three hours, hard in twelve hours, under proper drying conditions.

COVERING CAPACITY—Brush-applied over smooth surface, four to six hundred square feet per gallon, one coat.

APPLICATION—Because of its heavy body and its use as a floor coating, brush application is recommended. It is free-flowing and does not leave brush marks.

PACKAGE—In 1-gallon, ½, ¼, or ⅛-gallon cans.

General Directions for Applying Berrycraft Lionoil Floor Enamel

It should always be remembered that any material when applied to floors receives thereon far greater wear than when applied to other surfaces. A coating that will give years of satisfactory service when applied to walls will often give out in a few days when applied to floors. The finisher who produces the best work will always use floor coatings made for the purpose and thus be assured of receiving the necessary resistance to wear.

Cement floors are apt to be filled with small pore-like holes, small cracks, and interstices, and these must be sealed and closed. LIONOIL enters all these surface openings, fills them, and dries to a smooth, even surface upon which to build the succeeding coats and should be used as first coater under LIONOIL FLOOR ENAMELS on cement floors. A heavy-bodied material has not the same power of penetration or the same tooth, and will not adhere to the cement with the same tenacity.

The same wearing qualities which make BERRYCRAFT LIONOIL FLOOR ENAMEL the ideal finishing coat for cement floors also make it the ideal finish for wood floors. Its resistance to moisture results in a protective as well as a decorative coating, and wood floors finished with this enamel have less tendency to check, warp, or swell.

The nine colors in which Berrycraft Lionoil Floor Enamel is furnished makes it possible to produce very attractive and pleasing floors.

A satisfactory specification for finishing cement floors with Berrycraft Lionoil Floor Enamel is as follows: One coat of Lionoil Clear and two coats of Berrycraft Lionoil Floor Enamel.

The floor should be perfectly clean, free from grease, dirt, or soil of any kind and must be thoroughly dry. All coats should be brushed on and each one should be thoroughly dry before succeeding coat is applied. Rubbing or sanding is not required and the finish should be left in the natural gloss.

In finishing wood floors with Berrycraft Lionoil Floor Enamel, apply directly to wood. Do not apply second coat until first is thoroughly dry. Do not sand or rub either coat.

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